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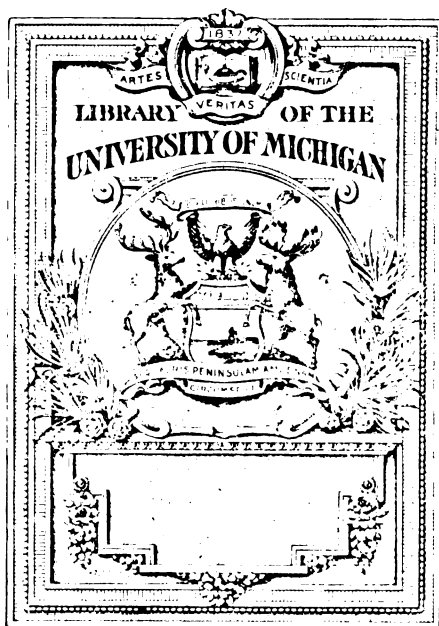
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Bulletin

Purdue University.
Agricultural Experiment Station



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COMMERCIAL FERTILIZERS

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*Connected with Fertilizer and Feeding Stuff Control.

COMMERCIAL FERTILIZERS

W. J. JONES, JR., O. C. HAWORTH, E. G. PROULX, C. W. RICE.

Summary of the Indiana Fertilizer Law.

The full text of the law governing the sale of fertilizers in Indiana has been published for so many years that it is deemed unnecessary to reprint it in full in this report.

Briefly summarized, the Fertilizer Law requires that the manufacturer, importer, agent, dealer or person desiring to offer material for sale for manurial purposes in this state shall:

First. File with the State Chemist a statement that he desires to offer such material for sale.

Second. Submit an acknowledged certificate for each brand giving the name of the person or firm registering the fertilizer, the location of his principal office, name under which the fertilizer will be offered for sale, the names of towns in Indiana where it will be on sale and the minimum guarantee of nitrogen, potash soluble in water and phosphoric acid.

Third. Each certificate must be accompanied by an order and fees for 500 tags or labels or some multiple of 500. The minimum fee per brand is \$7, \$2 for filing the certificate and \$5 for 500 tags. The registration of the certificate is permanent and after a brand is registered tags may be ordered as needed in lots of 500 or multiples. Tags are only furnished to the person or firm making the registration or on their written authorization.

Fourth. After the fertilizer has been registered and tags secured two things require the attention of the manufacturer:

(a) That no fertilizer is shipped into Indiana without having a State Chemist's tag or label attached to each and every package in a conspicuous place on the outside thereof. (This provision includes the sample bottles furnished to agents.) When fertilizer is delivered in bulk a State Chemist's tag or label must be given to the purchaser with each two hundred pounds or fraction.

(b) That all fertilizer shipped into Indiana equals in composition the guarantee on the State Chemist's tag or label attached to the shipment.

Fifth. Penalties are provided for selling without registration, without having proper tags attached, for failure to deliver tags with sales in bulk, for using a false or inaccurate guarantee, for failure of the fertilizer to equal the guarantee, for having untagged fertilizer in one's possession, for using the name and title of the State Chemist without proper authority and for interfering with the State Chemist or his deputies in the discharge of their official duties.

Sixth. The only materials exempt from the provisions of the law are barn yard manure, marl, lime, wood ashes and plaster and these only when sold under their respective names.

Concerning the Administration of the Law.

Manufacturers are not required to forward samples for analysis.

Agents and consumers are requested to note that the only samples which we analyze are those taken by our own inspectors. If an inspection is desired do not forward samples for analysis but write to the State Chemist stating when the fertilizer will be received, the name of the brand and amount. If a number of samples of the same brand have not already been inspected an inspector will call and secure a sample.

Manufacturers should not forward shipments without tags and agents are cautioned not to accept such shipments. The State Chemist does not give permission for shipments to be made without tags and where such shipments are made the person to whom they are consigned should refuse to accept them until proper tags are furnished and should attach a tag to each package before removing from car.

Agents, dealers and consumers are cautioned not to have in their possession either for their own use or the use of another any package or sample of fertilizer which does not have attached a State Chemist's tag or label.

Consumers should insist that the fertilizer delivered have State Chemist's tags or labels attached bearing the minimum guarantee agreed upon at time of purchase.

The official business of the State Chemist is limited to the inspection of fertilizers, feeding stuffs and the settlement of disputes between coal oil inspectors and dealers. The amount of official work required prohibits the analysis of miscellaneous materials such as soils, rocks, water, etc., either gratis or for pay.

Information relating to the subjects of fertilizers and feeding stuffs will be promptly furnished but the analysis of samples must be restricted to those taken by the inspectors from this office.

Important to Agents and Dealers Handling and Storing Fertilizer.

Agents and dealers should note that they are directly responsible for the composition of the fertilizer they offer or expose for sale, and should exercise care in storing it so that if, as often happens, it becomes necessary to resack the stock carried over the fertilizer will not be contaminated with dirt or other foreign material. This necessity is emphasized by the following case:

On Oct. 10th, our inspector, W. F. Fisher, secured a sample from ten bags of 1 ton of fertilizer offered for sale by the Odon Hardware Co., Odon, Ind., which was analyzed with the following results:

	Minium Guarantee on Tags Attached to Sacks.	Found
Per cent. of nitrogen, (N).....	0.8	1.1
Per cent. of potash, (K ₂ O), soluble in water	4.0	2.2
Per cent. of available phosphoric acid, (P ₂ O ₅)	8.0	10.7
Per cent. of insoluble phosphoric acid, (P ₂ O ₅)	1.0	1.9
Per cent. of total phosphoric acid, (P ₂ O ₅)	9.0	12.6

This being reported to the manufacturer, the claim was promptly made that he was not responsible, as the fertilizer had been carried over and resacked. Although no mention of the fact was made to the inspector further investigation showed the manufacturer to be correct.

In the case just mentioned while the consumer was given a fertilizer which equaled the money value of the guarantee the goods delivered showed a deficiency of 45 per cent. in potash which neither of the other elements, nitrogen or phosphoric acid, can replace on soils where it is needed.

Fertilizers should be stored in a clean, dry building, the different brands separated and where resacking is necessary every precaution taken to insure that the different brands do not become mixed and are not contaminated with foreign materials. Proper tags must be attached.

Inspectors should be informed when fertilizer has been carried over or resacked.

Some manufacturers rebate agents if the inspection samples do not meet the guarantee. While this is advisable in case the agent carries it further and rebates to his customers, the fact remains that even the payment of a rebate cannot in the majority of cases compensate for poor results obtained through fertilizers not containing the amounts of plant food guaranteed. While it is impossible in any business to prevent mistakes the cases where rebates are necessary should be the exception and not the rule. It should also be noted that the payment of a rebate does not relieve the manufacturer or agent of his responsibility under the law.

Our attention has been called to the fact that some agents continue to sell fertilizer from a shipment which the inspection shows to be below guarantee. In such cases the agent or person selling such fertilizer deliberately violates the law and will be promptly reported for prosecution. When the inspection report shows that any fertilizer offered for sale is below guarantee the person having such fertilizer should either secure tags giving the proper guarantee or return it to the manufacturer as having failed to meet the requirements of the Indiana Fertilizer Law.

Agents and dealers who desire to shift the responsibility to the manufacturer are advised to have written contracts containing a clause that any fertilizer failing to meet the guarantee can be returned to the manufacturer and that the said manufacturer will be responsible for any penalties assessed on account of fertilizer purchased from him failing to meet the requirements of the Indiana Fertilizer Law.

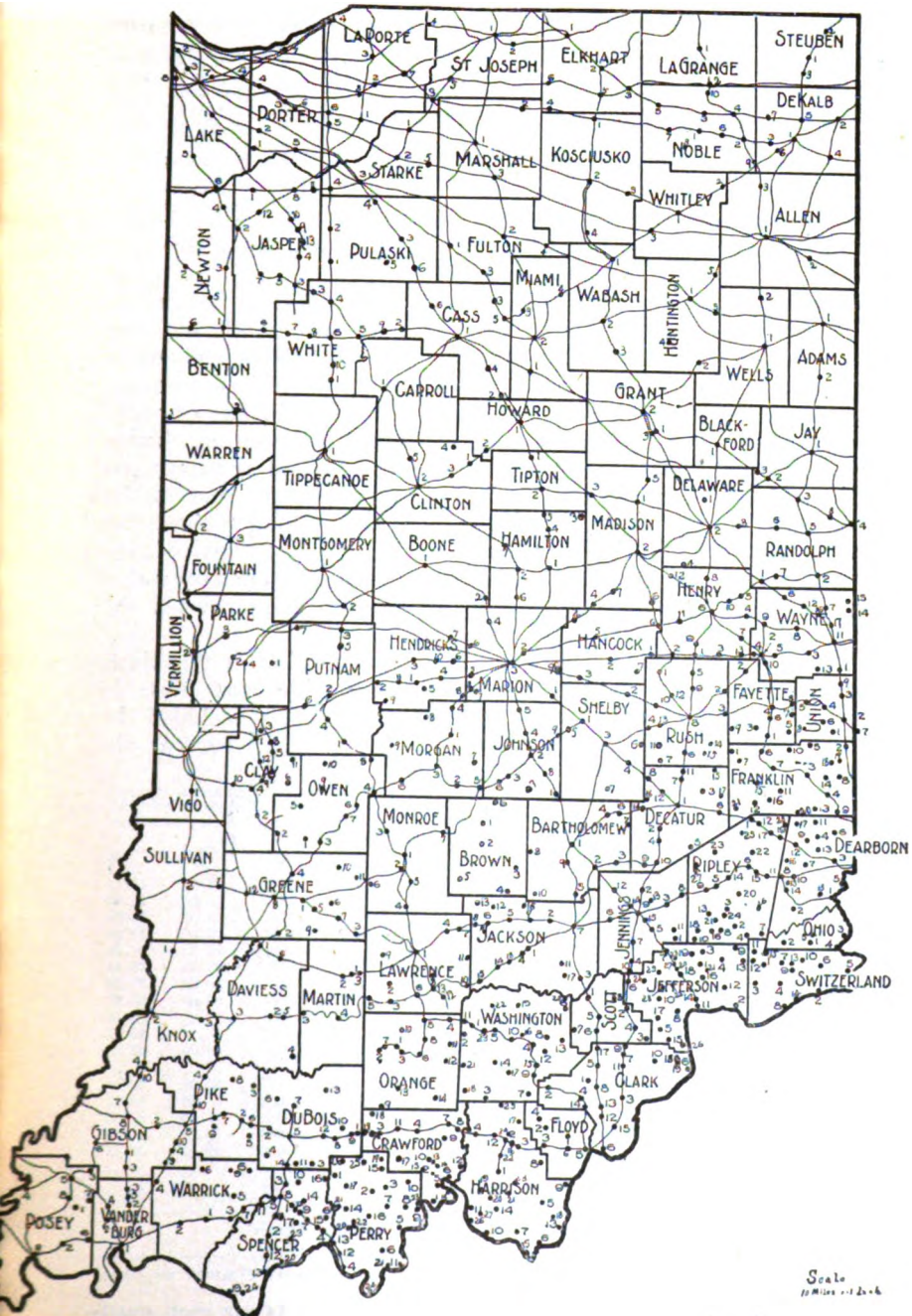
Enforcement of the Law.

Contrary to an opinion which seems prevalent the enforcement of the Indiana Fertilizer Law does not rest with the State Chemist but with the prosecutor of the district in which the violation occurs. Charges concerning the violation of the law may be filed by any citizen of the state, and while our inspectors are instructed to investigate and furnish information to the prosecutor regarding any violations, since the consumers are the persons most directly interested it is presumed that they will look after their own interests and thereby assist us in securing compliance with the provisions of the law by filing charges with the prosecutor in cases where violation of the law occurs. A copy of this bulletin is sent to every Prosecuting Attorney in the state and a certified copy of any analysis of fertilizer made by the State Chemist can be secured by any Prosecutor on request.

The working regulations of this office in so far as they relate to manufacturers who wish to register fertilizer for sale in Indiana and blank forms for making such registration will be furnished on request.

Fertilizer Map.

The map reproduced on the following page was prepared in order to give some idea of the distribution of the fertilizer trade in Indiana. In previous years a list containing all the towns numbered on the map was published but as these can be found by referring to the reports for 1906 and 1907 only the towns which have been added since the publication of bulletin 125 are given.



List of Towns Added to Map Since Fall, 1907.

County	No. of Town on Map	Name of Town	County	No. of Town on Map	Name of Town
Allen	3	Huntertown	Huntington	6	Roanoke
Cass	6	Royal Center	Kosciusko	4	Silver Lake
Crawford	19	Riceville	Marion	9	Julietta
Davless	4	Alfordsville	Marshall	3	Argos
	5	Cannelburg	Miami	4	Pettysville
	6	Odon	Perry	26	Siberia
Fulton	4	Akron	Randolph	8	Saratoga
Greene	12	Linton	Wayne	17	Chester
Hendricks	11	Amo	Wells	2	Ossian
Henry	13	Straughn	Whitley	8	South Whitley

Estimated Sales in 1908 Compared with those of 1899 and 1907.

Owing to the fact that the Fertilizer Law does not require an annual statement of sales, that tags are good until used and that one tag is used for all sized packages of 200 pounds or fraction it is extremely difficult to determine the amount of fertilizer used annually in this state, but based upon the sale of tags, the size of packages sampled by our inspectors, and all other information obtainable we estimate* that 102,309 tons of fertilizer valued at \$2,457,406 were sold in 1908. Of this amount 33,237 tons were sold in the spring and 69,072 tons in the fall. It should be noted that this estimate does not take into account fertilizer which is carried over from one season to another, but past experience has demonstrated that this factor does not vary greatly from year to year when the seasons are normal.

The growth of the fertilizer trade and variation in the kinds used as compared with the sales ten years previous and those in 1907 are shown in the following table in which is also included the average retail price of the different kinds in 1907 and 1908 as obtained by our inspectors.

Kind of Fertilizer	Estimated Sales in Tons			Average Retail Price per Ton	
	1899	1907	1908	1907	1908
Acid Phosphate, High Grade b	5187	6048	5579	16.30	17.11
Acid Phosphate, Low Grade	5738	906	2313	15.28	15.80
Acid Phosphate and Potash	7575	10775	12041	19.08	19.89
Ammoniated Acid Phosphate	8100	1803	1182	23.18	24.04
Complete Fertilizer	45188	68458	64718	28.70	24.04
Raw Bone	10469	6642	5528	28.20	28.44
Steamed Bone	6562	3165	6267	26.52	27.25
Bone and Potash	1088	1137	1524	28.50	29.82
Tankage and Potash			370		28.48
Acidulated Bone	600		27		25.37
Tankage	413	327	520	26.00	23.00
Dried Blood			84		
Nitrate of Soda	37	32	121	60.00	60.00
Raw Tennessee Rock		145	432	10.00	10.87
Muriate of Potash	28	415	680	55.00	52.75
Sulphate of Potash		139	86	60.00	57.00
Kainit		876	828	19.12	19.41
20% Manure Salt		33			
Basic Slag			34		
Tobacco Dust			50		28.00
Totals	90338	100791	102309		

a. The prices given are the average retail price without regard to composition.

b. Acid phosphate guaranteed to contain not less than 14 per cent. available phosphoric acid is classed as high grade in this table.

Raw Materials for Home Mixing.

Owing to results of experiments conducted by the Experiment Station in different parts of the state and by farmers on their own soil the use of fertilizers of special composition is on the increase, and the inquiries as to what companies have registered materials, for use in home mixing fertilizers are so numerous that it is deemed advisable to continue the special list giving this information.

Below will be found the names and addresses of firms registering raw materials furnishing nitrogen and potash, raw rock phosphate, basic slag, tobacco dust, and dried manure for sale in Indiana.

Ground bone and acid phosphate can be purchased of nearly every firm so they are not included in this list.

MATERIALS CONTAINING NITROGEN.

Nitrate of Soda.

Armour Fertilizer Works, The, Chicago, Ills.
Cincinnati Phosphate Co., Cincinnati, Ohio.
Darling & Company, Chicago, Ills.
Fessenden, F. L., Cincinnati, Ohio.
Hopkins Fertilizer Co., New Albany, Ind.
Louisville Fertilizer Co., Louisville, Ky.
Mt. Pleasant Fertilizer Co., Mt. Pleasant, Tenn.
Nitrate Agencies Co., Chicago, Ills.
Rauh & Sons' Fertilizer Co., E., Indianapolis, Ind.
Read Phosphate Co., Nashville, Tenn.
Seneca Fertilizer Co., Tiffin, Ohio.
Smith Agricultural Chemical Co., Columbus, Ohio.
Tuesberg, C. Elmer, Knox, Ind.
Weidman, Augustus, Hagerstown, Ind.

Dried Blood.

Armour Fertilizer Works, The, Chicago, Ills.
Swift & Company, Chicago, Ills.

Tankage.

Cincinnati Phosphate Co., Cincinnati, Ohio.
Evansville Packing Co., Evansville, Ind.
Fessenden, F. L., Cincinnati, Ohio.
Globe Fertilizer Co., Louisville, Ky.
Hopkins Fertilizer Co., New Albany, Ind.
Louisville Fertilizer Co., Louisville, Ky.
Major Bros., Mishawaka, Ind.
Pearl Packing House, Madison, Ind.
Smith Agricultural Chemical Co., Columbus, Ohio.

MATERIALS CONTAINING POTASH.

Muriate of Potash.

American Agricultural Chemical Co., The, Detroit Sales
Dep't., Detroit, Mich.
Armour Fertilizer Works, The, Chicago, Ills.
Bash Fertilizer Co., Fort Wayne, Ind.
Bingham & Winslow, Royal Center, Ind.
Bonday, Jr. & Co., James, Baltimore, Md.
Buhner, Ferdinand F., Seymour, Ind.
Cincinnati Phosphate Co., Cincinnati, Ohio.
Darling & Company, Chicago, Ills.
D. & K. Fertilizer Co., Indianapolis, Ind.
Farmers Fertilizer Co., Indianapolis, Ind.
Federal Chemical Co., Louisville, Ky.
Fessenden, F. L., Cincinnati, Ohio.
Fox Chemical Co., Louisville, Ky.
Globe Fertilizer Co., Louisville, Ky.
Groves Company, The, Cincinnati, Ohio.
Hess & Bro., S. M., Philadelphia, Pa.
Hirsh, Stein & Co., Chicago, Ills.
Hopkins Fertilizer Co., New Albany, Ind.
Hubbell & Sons Fertilizer Co., The L. W., Francesville, Ind.
Louisville Fertilizer Co., Louisville, Ky.
Mt. Pleasant Fertilizer Co., Mt. Pleasant, Tenn.
Nitrate Agencies Co., Chicago, Ills.
Pioneer Fertilizer Co., Chicago, Ills.
Read Phosphate Co., Nashville, Tenn.
Smith Agricultural Chemical Co., Columbus, Ohio.
Southern Indiana Fertilizer Co., Boonville, Ind.
Swift & Company, Chicago, Ills.
Tuesburg, C. Elmer, Knox, Ind.
Tuscarora Fertilizer Co., Chicago, Ills.
Weidman, Augustus, Hagerstown, Ind.

Sulphate of Potash.

Armour Fertilizer Works, The, Chicago, Ills.
Bonday, Jr. & Co., James, Baltimore, Md.
Darling & Company, Chicago, Ills.
Fessenden, F. L., Cincinnati, Ohio.
Hirsh, Stein & Co., Chicago, Ills.
Hubbell & Sons Fertilizer Co., The L. W., Francesville, Ind.
Louisville Fertilizer Co., Louisville, Ky.
Nitrate Agencies Co., Chicago, Ills.
Pioneer Fertilizer Co., Chicago, Ills.
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.
Smith Agricultural Chemical Co., Columbus, Ohio.
Swift & Company, Chicago, Ills.
Tuesburg, C. Elmer, Knox, Ind.
Tuscarora Fertilizer Co., Chicago, Ills.

Kainit.

American Agricultural Chemical Co., The Detroit Sales
Dep't., Detroit, Mich.
Armour Fertilizer Works, The, Chicago, Ills.
Bonday, Jr. & Co., James, Baltimore, Md.
Buffalo Fertilizer Co., Buffalo, N. Y.
The Chicago Fertilizer Works, Not Inc., Chicago, Ills.
Darling & Company, Chicago, Ills.
D. & K. Fertilizer Co., Indianapolis, Ind.
Federal Chemical Co., Louisville, Ky.
Hirsh, Stein & Co., Chicago, Ills.
Hubbell & Sons Fertilizer Co., The L. W., Francesville, Ind.
Indianapolis Fertilizer Co., Indianapolis, Ind.
Louisville Fertilizer Co., Louisville, Ky.
Nitrate Agencies Co., Chicago, Ills.
Pioneer Fertilizer Co., Chicago, Ills.
Smith & Company, Springfield, Ills.
Swift & Company, Chicago, Ills.
Tuscarora Fertilizer Co., Chicago, Ills.
Western Fertilizer Works, Indianapolis, Ind.

20% Manure Salt.

Fessenden, F. L., Cincinnati, Ohio.
Read Phosphate Co., Nashville, Tenn.

Dried Manure.

Natural Guano Co., Aurora, Ills.
Pulverized Manure Co., Chicago, Ills.

Rock Phosphate.

Farmers Ground Rock Phosphate Co., Mt. Pleasant, Tenn.
Farmers Phosphate Co., Urbana, Ills.
Jones, Robin, Nashville, Tenn.
Mt. Pleasant Fertilizer Co., Mt. Pleasant, Tenn.
Ruhm, Jr. John, Mt. Pleasant, Tenn.
Swan Creek Phosphate Co., Chicago, Ills.
Tennessee Phosphate Floats Co., Columbia, Tenn.

Basic Slag.

Reese Estate, Jacob, Darby, Pa.

Tobacco Dust.

Mayer Fertilizer Co., St. Louis, Mo.

Review of the Results of Inspection for the Past 7 Years, 1902-1908.

The first law permitting the field inspection of fertilizers was passed in 1899, at which time 67 per cent. of the samples were of such a character as seriously to deceive the purchaser and 46 per cent. were not within 10 per cent. of the guaranteed value.

The present law went into force in 1901 and the following summary gives the record of the inspection of the brands of each manufacturer now offering fertilizer for sale in the state, during the past 7 years, omitting the results of the first year's inspection. Unless specially noted the results cover a period of more than one year.

Table I. Summary of Results of Seven Years' Inspection (1902-1908)a

MANUFACTURER.	No. of Samples Collected.	No. Equal to Guar- antee in Every Particular.	No. Equal in Value to Guarantee.	No. Within 10 Per Cent of Value of Guarantee.	No. Not Within 10 Per Cent of Value of Guarantee.	No. with 1 or More Ingredients 20% Below Guarantee.
Abbott & Martin Rendering Co.....	70	31	42	21	7	23
Akin Packing Co. b.....	1	0	1		0	0
Alles, Rudy b.....	3	1	1	1	1	1
American Agricultural Chemical Co., The.....	292	147	245	30	17	13
American Agricultural Chemical Co., The Great Eastern Fertilizer Branch.....	17	12	16	1	0	2
American Agricultural Chemical Co., The M. E. Wheeler & Co. Branch.....	47	26	37	8	2	2
American Glue Co. b.....	1	0	1		0	0
American Reduction Co.....	6	2	6		0	1
Anderson Fertilizer Co.....	4	2	4		0	0
Armour Fertilizer Works, The.....	318	172	274	40	4	20
Atlas Fertilizer Co.....	9	0	4	3	2	5
Bash Fertilizer Co. b.....	19	3	6	10	3	9
Bash Packing Co.....	131	15	34	51	46	65
Bausbach & Sons, Robert.....	14	13	13	1	0	0
Bender, Joe.....	6	2	4	2	0	0
Benz, Michael.....	2	2	2		0	0
Bonday & Co., James, Jr., b.....	1	1	1		0	0
Bowker Fertilizer Co.....	161	95	121	36	4	1
Buffalo Fertilizer Co.....	5	1	1	1	3	0
Buhner, Ferdinand F.....	26	17	25	1	0	6
Champion Fertilizer Co., The.....	4	1	4		0	0
Chicago Fertilizer Co., The.....	67	17	40	15	12	18
Cincinnati Phosphate Co.....	159	60	96	46	15	31
Continental Fertilizer Co.....	59	20	42	14	3	8
Corya, J. W.....	21	5	12	5	4	5
Darling & Company.....	144	94	137	6	1	2
D. & K. Fertilizer Co.....	60	16	42	11	7	2
Dryfus Packing & Provision Co. b.....	1	1	1		0	0
Empire Carbon Works.....	8	1	5	3	0	0
Empire Guano Co.....	17	8	10	6	1	1
Ewing, Geo. M.....	27	15	21	5	1	3
Farmers Fertilizer Co.....	103	62	116	36	11	44
Farmers Phosphate Co. b.....	1	0	0	1	0	0
Federal Chemical Co.....	51	10	27	22	2	15
Fessenden, F. L.....	4	4	4		0	0
Fox Chemical Co.....	151	64	122	27	2	19
Globe Fertilizer Co.....	248	109	197	45	6	38
Hardy Packing Co., The.....	78	22	51	15	12	32
Hess & Bro., S. M.....	59	31	51	7	1	3
Hilgemier & Bro., Frank.....	1		1		0	1

MANUFACTURER.

MANUFACTURER.	No. of Samples Collected.	No. Equal to Guarantee in Every Particular.	No. Equal in Value to Guarantee.	No. Within 10 Per Cent of Value of Guarantee.	No. Not Within 10 Per Cent of Value of Guarantee.	No. with 1 or More Ingredients 90% Below Guarantee.
Hirsh, Stein & Co., b.....	21	15	20	1	0	1
Hopkins Fertilizer Co.....	118	30	69	23	17	38
Hubbell & Sons Fertilizer Co., L. W.....	32	16	27	6	0	2
Indianapolis Fertilizer Co.....	28	6	23	6	0	17
Indianapolis Rendering Co.....	88	34	66	15	3	19
Indiana Tanking Co. b.....	3	1	1	2	0	0
Jarecki Chemical Co.....	141	44	94	53	14	28
Jones, J. B.....	7	3	3	3	1	1
Jones, Robin.....	7	4	4	3	0	0
Jones Fertilizing Co., The.....	78	21	51	23	2	8
Kalamazoo Rendering & Fertilizer Co.....	1	0	0	1	0	1
Kaufman Fertilizer Co.....	31	14	23	7	1	6
Lister, Joseph.....	6	1	2	4	0	0
Louisville Fertilizer Co.....	134	52	90	34	10	13
Mace & Mansfield.....	3	1	1	2	0	0
Major Bros. b.....	2	2	2	2	0	0
Mathiason Mfg. Co., P. B.....	14	3	11	3	0	3
Mayer Fertilizer Co., The.....	33	16	22	6	5	9
Michigan Carbon Works.....	129	87	110	12	7	5
Monarch Fertilizer Co.....	29	4	12	14	3	14
Morris & Co.....	145	85	135	9	1	10
Mt. Pleasant Fertilizer Co, b.....	7	5	6	1	0	0
National Fertilizer Co.....	3	5	7	1	1	2
Natural Guano Co. b.....	1	0	1	1	0	0
Norris Fertilizer Co.....	35	14	24	10	1	3
North Western Fertilizing Co.....	166	94	146	19	1	4
Ohio Farmer Fertilizer Co.....	101	27	60	16	25	38
Packer Fertilizer Co., (Indianapolis).....	85	34	56	23	4	16
Packers Fertilizer Association.....	115	51	98	26	4	6
Packers Fertilizer Co. (Cincinnati).....	99	26	65	31	3	21
Pero & Stoecker.....	16	11	16	1	0	0
Queen City Fertilizer Co.....	5	2	4	1	1	1
Rauh & Sons Fertilizer Co., The E.....	202	80	166	33	13	56
Read Phosphate Co.....	66	35	51	13	2	6
Schmadel, Louis.....	19	1	9	4	6	12
Seneca Fertilizer Co. b.....	1	1	1	1	0	0
Smith, Wm., Jr.....	3	2	2	1	0	1
Smith Agricultural Chemical Co.....	7	1	1	3	3	6
Smith & Company.....	8	1	6	2	0	1
Southern Indiana Fertilizer Co.....	34	11	14	17	3	7
Southern Seed Co. b.....	1	0	1	1	0	0
Star Tankage & Fertilizer Works.....	32	17	18	4	0	3
Swift & Company.....	195	67	123	62	10	24
Tennessee Chemical Co.....	90	27	56	32	2	14
Turley Co., T. J.....	2	0	2	1	0	0
Tuscarora Fertilizer Co.....	87	47	68	16	3	4
Walton Fertilizer Co.....	4	1	2	2	0	2
Ward & Co., Montgomery b.....	1	0	0	1	0	1
Weldman, Augustus.....	14	11	18	1	0	0
Western Fertilizer Works.....	39	7	27	8	4	20
Wulchet Fertilizer Co., The.....	83	8	44	26	13	39
Totals.....	5015	2111	3648	1087	330	330

a—Only results of brands of manufacturers now offering fertilizer for sale in Indiana are given in this table.
b—Inspection covers one year.

Comparison of Standing of Manufacturers.

We are constantly receiving inquiries regarding the standing of different companies. All the information available is given in this bulletin and by using Tables I, II, III, IV and V, pages 512, 523, 524, 525, to 528 in conjunction with Table

VI, page 529, the manner in which any manufacturer selling fertilizer in Indiana has been and is maintaining his guarantees can readily be ascertained.

Consumers are advised to protect themselves and assist in enforcing the fertilizer law by purchasing from manufacturers whose inspection samples show that their guarantees are uniformly maintained.

Report of Inspection Made in 1908.

During the past year our inspectors visited all the counties in the state where fertilizers were offered for sale, securing 914 samples, representing 81 companies. The analysis of 902 of these samples are reported in this bulletin. Of the 914 samples secured 484 were obtained in the spring and 430 in the fall.

The samples analyzed were divided as follows:

KIND OF FERTILIZER.	Spring	Fall	Total
Acid Phosphate, High Grade.....	15	22	37
Acid Phosphate, Low Grade.....	19	10	29
Acid Phosphate and Potash.....	45	44	89
Ammoniated Acid Phosphate.....	2	3	5
Complete Fertilizer.....	334	244	578
Raw Bone.....	15	61	76
Steamed Bone.....	11	22	33
Acidulated Bone.....	2	5	7
Bone and Potash.....	3	10	13
Tankage.....	1	2	3
Tankage and Potash.....	2	1	3
Dried Blood.....	0	0	0
Nitrate of Soda.....	1	0	1
Raw Rock Phosphate.....	1	2	3
Muriate of Potash.....	7	1	8
Sulphate of Potash.....	6	0	6
Kainit.....	7	1	8
20% Manure Salt.....	0	0	0
Dried Manure.....	1	0	1
Tobacco Dust.....	0	1	1
Night Soil.....	0	1	1
Totals.....	472	430	902

The analyses of these samples are reported in Table VI. The purpose of this table is to show the composition of the fertilizer found at different places. The tag or label shows what the purchaser is entitled to receive, and the analysis shows the composition of the fertilizer to which the tags or labels were attached.

The names and addresses of persons from whom samples were obtained are given in Table VII.

In Table VIII is given a list of the brands and manufacturers of them which we have been informed will be offered for sale in Indiana in 1909. In this connection it should be noted that since the registration of a brand is permanent any registered brand may legally be sold at any time without regard to its publication in this list providing the packages have the State Chemist's tag or label attached. This table includes all brands registered and reported by manufacturers to April 2nd, 1909.

Summary of Inspection for the Past Eight Years.

	1901	1902	1903	1904	1905	1906	1907	1908 B
No. of samples collected and analyzed	502	679	674	643	734	879	793	901
No. equal to guarantee in every particular	281	335	285	248	312	374	265	391
No. equal to guarantee in value	469	564	493	451	528	642	481	683
No. within 10% of value of guarantee	85	98	139	148	159	176	210	171
No. not within 10% of value of guarantee	38	22	43	44	48	61	108	47
No. with one or more ingredient 2% below guarantee	103	112	138	122	148	136	177	134
No. with one or more ingredient 30% below guarantee				65	77	64	75	51
No. with one or more ingredient 50% below guarantee				21	21	25	39	5

B—Does not include sample secured from Odon Hardware Co. mentioned on page 505.

It will be seen by the above summary that the showing made in 1908 is much better than that made in 1907, both as regards the number of brands falling into the column headed "Not within 10% of value of Guarantee" and the number falling into column 6, in which respect it is only equalled by the year 1904, when 258 less samples were taken. Taken as a whole the inspection must be considered as fairly satisfactory, but there are still some manufacturers who are shipping fertilizer which varies so widely from the guarantee as to be inexcusable. Even if it be admitted that some variation may be expected in the fertilizing ingredients there is absolutely no excuse for any fertilizer sold in the state failing to come within 10 per cent. of the value of the guarantee.

A comparison of the inspection of samples taken in the spring and fall of 1908, Tables II and III, shows that the fertilizer sold in the fall was much better both as regards mixing and composition.

Summary Comparing Inspection of Samples Obtained in the Spring and Fall, 1908.

	Spring	Fall	Per Cent Spring	Per Cent Fall
No. of samples collected	473	420	53.3	47.7
No. equal to guarantee in every particular	184	207	39.0	48.3
No. equal to guarantee in value	339	354	60.7	83.5
No. within 10% of value of guarantee	106	68	22.9	14.7
No. not within 10% of value of guarantee	35	13	7.4	2.8
No. with one or more ingredient 20% below guarantee	73	61	15.5	14.3
No. with one or more ingredient 30% below guarantee				
No. with one or more ingredient 50% below guarantee	27	24	5.7	5.6
	8	0	1.7	0.0

Classification of Brands Which Did Not Equal in Value the Guarantee.

	No. within 10% of value of guarantee			No. not within 10% of value of guarantee		
	Spring	Fall	Total	Spring	Fall	Total
Acid Phosphate, High Grade.....	5	5	10	2	0	2
Acid Phosphate, Low Grade.....	9	4	13	0	0	0
Acid Phosphate and Potash.....	21	7	28	5	2	7
Ammoniated Acid Phosphate.....	1	1	2	1	0	1
Complete Fertilizer.....	60	39	99	26	5	30
Raw Bone.....	4	9	13	0	2	2
Steamed Bone.....	1	2	3	1	1	2
Acidulated Bone.....	0	1	1	0	0	0
Bone and Potash.....	0	1	1	1	1	2
Tankage.....	0	0	0	0	0	0
Tankage and Potash.....	1	0	1	0	0	0
Raw Rock Phosphate.....	1	1	2	0	0	0
Muriate of Potash.....	0	0	0	0	0	0
Sulphate of Potash.....	3	0	3	0	0	0
Kainit.....	2	0	2	0	0	0
Night Soil.....	0	0	0	0	1	1
Totals.....	108	68	171	35	13	47

Classification of Brands in Which One or More Ingredients Was Not Within 20 Per Cent. of the Guarantee.

	No. with one or more ingredient 20% below guarantee.	No. with one or more ingredient 30% below guarantee.	No. with one or more ingredient 50% below guarantee.	No. with two ingredients 20% below guarantee.	No. with three ingredients 20% below guarantee.
Acid Phosphate and Potash.....	10	4	0	0	0
Ammoniated Acid Phosphate.....	8	2	0	2	0
Complete Fertilizer.....	110	30	7	17	1
Raw Bone.....	6	2	0	0	0
Acidulated Bone.....	1	1	0	0	0
Bone and Potash.....	2	1	1	1	0
Tankage and Potash.....	1	1	0	0	0
Night Soil.....	1	1	0	1	0

The brands classified in the above summary were deficient in fertilizing ingredients as follows:

INGREDIENT.	No. 20 to 30 Per Cent. Below Guarantee.	No. 30 to 50 Per Cent. Below Guarantee.	No. 50 to 60 Per Cent. Below Guarantee.
Nitrogen.....	41	23	7
Potash.....	42	18	1
Available Phosphoric Acid.....	9	3	0
Total Phosphoric Acid.....	7	4	0

Results of Inspection.

The results of the inspection show a decided improvement over that of previous years but there is still room for more accurate mixing. While it is reasonable to expect that some variation should occur it is certain that none of the samples should fail to equal the value of the guarantee, that it is inexcusable for any of them to fall into the "Not Within 10 per cent." column and that the deficiency in any ingredient should not exceed 20 per cent. of the guarantee.

The results show that the large majority of manufacturers are maintaining their guarantees and that in this respect the improvement over the inspection of last year is very pronounced. It is expected that those manufacturers who do not come within the above class will take heed and see that all the fertilizer which they offer for sale in Indiana meets the guarantee.

Manufacturers are supposed to know the composition of the fertilizers they offer for sale, and they are at liberty to make any guarantee that they may desire. But after the guarantee is made it is no hardship to require them to adhere to it closely enough so that the essential character of a brand is maintained and its value shall not fall below the value of the guarantee. Where one ingredient is low on account of imperfect mixing, other ingredients should be correspondingly high, and such samples would appear under line 3 in the summaries on pages 523 to 525 as equal to the legal guarantee in value. Line 4 shows that there are some samples in which the purchaser would not receive what he is entitled to receive, but in our opinion the deficiency is not large enough to indicate a deliberate intent to defraud. When brands fall into the class shown in line 5 it must be considered due to inexcusable carelessness, gross ignorance or intent to defraud. Whatever may be the cause, farmers cannot afford to take chances on this class of brands, since the deficiencies sometimes amount to more than half the value of the brands.

The brands under lines 6, 7 and 8 are those in which the mixing is so bad that the essential character of the brand is changed. Sometimes the brands in this class, while containing less than four-fifths as much of one ingredient as they are guaranteed to contain, have enough of another ingredient to make their value as great as required by the guarantee, but even these samples show such bad mixing that the essential character of the fertilizer is changed. When a purchaser contracts for a brand guaranteed to contain 1.7% of nitrogen, 1.2% of potash, 11% of available phosphoric acid and 5% of insoluble phosphoric acid it cannot be filled by furnishing one containing 1.2% of nitrogen, 0.2% of potash, 14.5% of available phosphoric acid and 2% of insoluble phosphoric acid.

In order that manufacturers who are giving more than the guaranteed value of the fertilizers they are selling in this state may have the benefit for so doing an additional column has been added to Table V, page 527, showing the number of brands of each manufacturer which exceeded the guaranteed value by one dollar or more per ton. This table is computed on the basis of prices given on this page and without regard to the retail price of the brands.

In purchasing fertilizers consumers are advised to consult tables I, II, III, IV, V, pages 512, 523, 524, 525, 527, and to purchase only of companies whose inspection results show that they are uniformly furnishing the kinds, amounts and value of fertilizing ingredients guaranteed, in other words, from companies whose summaries show the greater percentage of the brands inspected falling in the Equal and Equal in Value columns and with few in the 20 per cent. column.

The details for the summaries are given in Table VI, which table the consumer should consider in connection with Tables I, II, III and IV.

Prices Used in Valuation of Fertilizers.

A review of the price of materials in 1908 leads us to believe that the prices adopted in previous years are nearly an average and they have therefore been used in computing the comparative values of fertilizer sold in 1908 as follows:

Nitrogen, 17½ cents per pound.

Potash soluble in water, 6 cents per pound.

In bone and tankage, total phosphoric acid, 3½ cents per pound.

In raw rock phosphate, total phosphoric acid, 2 cents per pound.

In mixed fertilizers containing nitrogen, insoluble phosphoric acid, 2 cents per pound.

In fertilizer containing no nitrogen no value is given to insoluble phosphoric acid.

If one wishes to use the unit system, that is, the value of each 1 per cent. of each ingredient, these values become:

Nitrogen, \$3.50 per unit.

Potash soluble in water, \$1.20 per unit.

Soluble and reverted phosphoric acid, \$1.20 per unit.

Phosphoric acid in bone, \$0.70 per unit.

Phosphoric acid in raw rock phosphate, \$0.40 per unit.

Insoluble phosphoric acid in mixed goods containing nitrogen, \$0.40 per unit.

It must be kept in mind that these rates are not used for the purpose of indicating the agricultural value of the fertilizer or the return which may be expected from the use of the fertilizer. This

matter is controlled by the soil, season, kind of crop and method of applying the fertilizer. Neither do we attempt to indicate the exact value at which fertilizer ought to be sold at every point in the state, nor to take into account the long credits often extended to purchasers of fertilizers. We use these rates solely for the purpose of comparing the value of the fertilizer as guaranteed by the manufacturer with the value of the samples we collect in the open market. Purchasers may find these rates of use in comparing the relative value of similar brands offered by different manufacturers.

Comment of Manufacturers Regarding Samples.

Sample B. 6872. The Armour Fertilizer Works, Chicago, Ills., taken from two tons in the possession of Geo. W. Cleveland, Orleans, Ind.

Under date of Feb. 11th, 1909, Mr. DeWitt C. Brown writes for The Armour Fertilizer Works, stating that on account of a fire which practically destroyed all that part of their plant where complete fertilizers were manufactured they were forced to mix in small lots and that inspection sample B. 6872 was evidently taken from a lot of 2 tons mixed in 1000 pound lots and that in one of these lots an error was made by the mixer failing to put in the potash salts. Mr. Brown further states that the Armour Fertilizer Works remitted the agent, Mr. Cleveland, at the rate of \$3.39 per ton to cover deficiency shown by the inspection.

Sample B. 6475. Bash Packing Co., Fort Wayne, Ind.

On July 7, 1908, Inspector O. S. Roberts obtained from 5 tons of goods in the possession of B. F. Sourbeer, East Germantown, Ind., a sample of The Bash Packing Co.'s Blood, Bone and Potash, No. 3667. The analysis of this sample being reported July 31st, to the Company objection was made by Mr. C. S. Bash, Sr., accompanied by a request that the shipment be resampled. It having been the feeling of the Bash Packing Co., and their agents that the sampler used by this department did not correctly sample their goods, a special sampler was devised to meet their objections and pursuant to agreement Messrs. C. S. Bash, Sr., and Jr., representing the Bash Packing Co., Mr. C. E. Rodenberg, representing Mr. Sourbeer, and the State Chemist and O. C. Haworth, Chief Deputy, representing this department, met in East Germantown on August 4th, where the new sampler was submitted to Mr. C. S. Bash, Sr., and met his approval.

Accordingly a sample was taken with the new sampler from the same 20 sacks sampled by Mr. Roberts on July 7th. Mr. Bash stated in writing and in the presence of witnesses that he was satisfied with the sample drawn. This sample was carefully mixed and quartered and divided into 4 portions, 2 of which were delivered to

Mr. Bash, Sr., for transmission to his chemist, W. E. Nader, Columbus, Ohio, and W. J. Gascoyne, Baltimore, Md. One portion was sent by this department to Prof. W. E. Curtis in charge of the Fertilizer Inspection, Lexington, Ky., and the other portion retained for analysis in the State Chemist's laboratory. In addition the residue left after the 4 portions were withdrawn was analyzed by this department.

A second sample was also taken from the same bags sampled by Mr. Roberts using the sampler used by him on July 7th.

Below we give a description of the samples and results of the various analysts. The comparative values given are based on the prices given on page 518 of this bulletin.

Description of Samples.

1. Guarantee for Bash's Blood, Bone and Potash, No. 3667.
2. Analysis of sample taken by O. S. Roberts, July 7th.
3. Analysis of sample taken on August 4th, with special sampler, by analysts mentioned.
4. Analysis of residue from 3.
5. Sample from same 20 sacks sampled by Mr. Roberts on July 7th, with sampler used by him.

Number	1	2	3			4	5
Analyst	Guarantee	State Chemist's Laboratory	State Chemist's Laboratory	Dr. W. E. Curtis	Dr. W. J. Gascoyne	W. E. Nader	State Chemist's Laboratory
Nitrogen, (N)	2.0	1.65	1.67	1.68	1.66	1.68	1.61
Potash, (K ₂ O), soluble in water	2.0	1.91	1.86	1.86	1.77	2.10	1.94
Available Phosphoric Acid, (P ₂ O ₅)	8.0	7.99	7.96	8.08	8.39	8.15	7.96
Insoluble Phosphoric Acid, (P ₂ O ₅)	1.0	1.14	1.08	1.13	1.23	1.25	1.14
Total Phosphoric Acid, (P ₂ O ₅)	9.0	9.09	9.08	9.15	9.44	9.40	9.10
Comparative value per ton	\$ 19.40	18.08	18.04	17.75	18.29	18.47	17.97

Since we report only to the first decimal place the original report to the Bash Packing Co., on July 7th, sample, and the one drawn August 4th, were as follows:

Number	2	3
Nitrogen, (N)	1.7	1.7
Potash, (K ₂ O), soluble in water	1.9	1.9
Available Phosphoric Acid, (P ₂ O ₅)	7.9	8.0
Insoluble Phosphoric Acid, (P ₂ O ₅)	1.2	1.1
Total Phosphoric Acid, (P ₂ O ₅)	9.1	9.1
Comparative value per ton	\$ 18.19	18.37

It will be noted from these results that not one of the analysts to whom portions of this sample were referred found it up to guarantee either as regards fertilizing ingredients or comparative value.

A careful study of the facts in this case lead us to believe that we are justified in concluding that the sampler used by this department on July 7th, correctly sampled the fertilizer manufactured by

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the Bash Packing Co., and that the results reported under date of July 31st, were correct for the shipment of Bash's Blood, Bone and Potash in the possession of Mr. Sourbeer.

Sample B 6544. D. & K. Fertilizer Co., Indianapolis, Ind., taken from 1¾ tons in the possession of James F. Harwood, Greensburg, Ind.

Aug, 1900.

Under date of Dec. 9th, the manufacturers call attention to the fact that this fertilizer was originally shipped to E. S. Buckley, and since shipped by them had passed through the hands of three persons and that either in the transfer or at the factory a mistake had been made in tagging this fertilizer which was really Dissolved Bone with Potash No. 3362 and not D. & K. Phosphate and Potash No. 4210 as labeled. The claims of the manufacturers in this respect are borne out by the fact that after the statement was made to this office the sample was reanalyzed, the nitrogen being determined with the following results: Nitrogen, (N) % 0.8, Potash, (K_2O), soluble in water % 1.3, Available Phosphoric Acid, (P_2O_5) % 7.6, Insoluble Phosphoric Acid, (P_2O_5) % 2.3 which corresponds very closely to their guarantee of 0.8% Nitrogen, 1.1% Potash, 7% Available Phosphoric Acid and 1.0% Insoluble Phosphoric Acid made for Dissolved Bone and Potash. The comparative value of the fertilizer guaranteed was \$14.40 per ton and the comparative value of the fertilizer furnished just equalled this amount.

Sample B 6447. L. W. Hubbell & Sons' Fertilizer Co., Kainit No. 3641, taken from 600 pounds in the possession of Geo. M. Calvin, Kewanna, Ind.

The low percentage of Potash found in this sample was called to our attention by the manufacturers and on complete analysis it was found to contain 0.1 per cent. of nitrogen and 0.9 per cent. of phosphoric acid, showing conclusively that a portion of the shipment bore the wrong label. Samples of this brand secured in previous years have always exceeded the guarantee.

B 6426. Jarecki Chemical Co., Cincinnati, Ohio, Black Soil Special No. 3950, taken from goods in possession of Fred Reule, LaFayette, Ind.

Under date of Aug. 28th, the Jarecki Chemical Co., inform us that they have instructed Mr. Reule to return the fertilizer to the factory.

In connection with the preceding, manufacturers are requested to note that the State Chemist's label attached to the packages of fertilizer offered for sale in this state fixes the guarantee and the claim that the wrong tags were attached does not relieve them of responsibility under the law.

Requests have been received asking that for various reasons we discard samples already analyzed and secure new samples to take their places. **All such requests must be refused and the sub-**

stitution or omission of an inspection sample will only be made when error on the part of this department can be shown.

Some manufacturers have claimed that a sufficient number of their samples were not obtained. It is the intention of the department in so far as possible to analyze at least one sample of each brand offered for sale in the spring and in the fall. In the case of brands which have a large sale and those of manufacturers whose past record show failure to maintain their guarantees this number will be increased.

Manufacturers may if they desire submit list of shipments made but this department cannot bind itself to sample any such shipments and lists of less than 12 firms in different portions of the state will be without value. Since the law requires that all fertilizer sold shall equal the guarantee attached to the packages the fact that only one sample is secured does not in any way relieve the manufacturer of the responsibility for failure of the shipment sampled to meet the guarantee.

It having been brought to our attention that the use of leather was being practiced by some manufacturers of fertilizers all inspection samples taken in 1909 will be tested for its presence and special mention made of any samples found to contain it.

The following tables summarize the results of the inspection for 1908, show the results of the analyses of samples collected in 1908, the names and addresses of persons from whom samples were secured, the list of brands offered for sale in the state and manufacturers of same.

TABLE II. Summary of Results of Inspection of Samples Secured Spring 1908.

MANUFACTURER.	No. of Samples Collected.	No. Equal to Guarantee in Every Particular.	No. Equal in Value to Guarantee.	No. Within 10% of Value of Guarantee.	No. Not Within 10% of Value of Guarantee.	No. With 1 or More Ingredients 20% Below Guarantee.	No. With 1 or More Ingredients 30% Below Guarantee.	No. With 1 or More Ingredients 50% Below Guarantee.
Abbott & Martin Rendering Co., The.	4	4	4	0	0	0	0	0
Alles, Rudy	1	1	1	0	0	0	0	0
American Agricultural Chemical Co., The.	18	15	18	0	0	0	0	0
American Agricultural Chemical Co., The Great Eastern Fertilizer Branch.	1	1	1	0	0	0	0	0
American Agricultural Chemical Co., The M. E. Wheeler & Co., Branch.	3	3	3	0	0	0	0	0
Armour Fertilizer Works, The	38	20	30	7	1	2	1	0
Atlas Fertilizer Co.	3	0	0	2	1	2	1	0
Bash Fertilizer Co.	9	1	1	5	3	6	4	2
Bash Packing Co.	33	3	5	13	15	23	13	5
Bender, Joe	2	0	1	1	0	0	0	0
Bonday & Co., James, Jr.	1	1	1	0	0	0	0	0
Bowker Fertilizer Co.	19	14	17	2	0	0	0	0
Buhner, Ferdinand F.	2	0	2	0	1	0	0	0
Chicago Fertilizer Co., The.	5	1	5	0	0	0	0	0
Cincinnati Phosphate Co., The.	9	7	8	1	0	0	0	0
Continental Fertilizer Co.	3	2	3	0	0	0	0	0
Corya, J. W.	3	1	3	0	0	0	0	0
Darling & Company	9	3	8	1	0	0	0	0
D. & K. Fertilizer Co.	1	1	1	0	0	0	0	0
Dryfus Packing & Provision Co.	1	1	1	0	0	0	0	0
Farmers Fertilizer Co.	14	8	12	1	1	0	0	0
Farmers Phosphate Co.	1	0	0	1	0	0	0	0
Federal Chemical Co.	22	2	11	10	1	8	2	0
Fox Chemical Co.	11	4	8	2	1	2	0	0
Globe Fertilizer Co.	29	7	18	10	1	5	0	0
Hardy Packing Co.	5	2	5	0	0	0	0	0
Heas & Bro., S. M.	2	2	2	0	0	0	0	0
Hilgemeler & Bro., Frank.	1	0	1	0	1	0	0	0
Hirsh, Stein & Co.	1	0	1	0	1	0	0	0
Hopkins Fertilizer Co.	13	2	10	2	1	4	0	0
Hubbell & Sons Fertilizer Co., The L. W.	7	6	6	1	0	0	0	0
Indianapolis Rendering Co.	5	3	5	0	0	0	0	0
Jarecki Chemical Co., The	19	10	18	1	0	0	0	0
Jones Fertilizing Co., The	3	0	3	0	1	0	0	0
Kalamazoo Rendering & Fertilizing Co.	1	0	0	1	0	1	1	0
Kaufman Fertilizer Co.	1	1	1	0	0	0	0	0
Louisville Fertilizer Co.	10	8	8	2	0	0	0	0
Mace & Mansfield.	1	1	1	0	0	0	0	0
Major Bros.	1	1	1	0	0	0	0	0
Mayer Fertilizer Co.	3	0	1	1	0	0	0	0
Michigan Carbon Works.	11	5	8	2	1	0	0	0
Monarch Fertilizer Co.	7	0	1	4	2	4	1	0
Morris & Company	12	4	11	1	0	1	0	0
Natural Guano Company.	1	0	1	0	0	0	0	0
North Western Fertilizing Co.	15	7	11	4	0	0	0	0
Ohio Farmers Fertilizer Co.	8	5	7	1	0	0	0	0
Packer Fertilizer Co., (Indianapolis)	4	2	3	1	0	0	0	0
Packers Fertilizer Association.	15	7	9	4	2	1	0	0
Packers Fertilizer Co., (Cincinnati)	13	4	8	5	0	0	0	0
Pero & Stoecker	1	1	1	0	0	0	0	0
Rauh & Sons Fertilizer Co., The E.	15	9	13	2	0	1	1	0
Read Phosphate Co.	2	0	0	2	0	0	0	0
Smith & Company.	2	0	1	1	0	1	0	0
Southern Indiana Fertilizer Co.	2	0	0	2	0	2	2	1
Star Tankage & Fertilizer Works.	1	1	1	0	0	0	0	0
Swift & Company	23	6	12	9	2	4	1	0
Tennessee Chemical Co.	4	1	4	0	0	0	0	0
Tuscarora Fertilizer Co.	9	2	6	3	0	0	0	0
Ward & Co., Montgomery.	1	0	0	1	0	1	0	0
Weldman, Augustus	1	0	1	0	0	0	0	0
Western Fertilizer Works.	2	0	1	1	1	0	0	0
Wuchet Fertilizer Co.	8	0	5	3	0	0	0	0
Totals	472	184	329	108	85	73	27	8

TABLE III. Summary of Results of Inspection of Samples Secured Fall 1908.

MANUFACTURER.	No. of Samples Collected.	No. Equal to Guarantee in Every Particular.	No. Equal in Value to Guarantee.	No. Within 10% of Value of Guarantee.	No. Not Within 10% of Value of Guarantee.	No. With 1 or More Ingredients 2% Below Guarantee.	No. With 1 or More Ingredients 3% Below Guarantee.	No. With 1 or More Ingredients 4% Below Guarantee.	No. With 1 or More Ingredients 5% Below Guarantee.
Abbott & Martin Rendering Co., The	7	4	7	0	1	0	0	0	0
Akin Packing Co.	1	0	1	0	0	0	0	0	0
Alles, Rudy	2	0	2	1	1	1	1	0	0
American Agricultural Chemical Co., The	17	11	14	3	0	1	0	0	0
American Agricultural Chemical Co., The M. E. Wheeler & Co., Branch	1	1	1	0	0	0	0	0	0
American Glue Co.	1	0	1	0	1	0	0	0	0
American Reduction Co.	3	1	3	0	1	1	1	0	0
Armour Fertilizer Works, The	23	13	22	4	2	2	1	0	0
Atlas Fertilizer Co.	3	0	3	0	2	0	0	0	0
Bash Fertilizer Co.	10	2	5	5	0	3	1	0	0
Bash Packing Co.	7	1	5	1	1	3	2	0	0
Bausback & Sons, Robert	1	1	1	0	0	0	0	0	0
Bender, Joe	2	1	2	0	0	0	0	0	0
Benz, Michael	1	1	1	0	0	0	0	0	0
Bowker Fertilizer Co.	12	11	12	0	0	0	0	0	0
Buhner, Ferdinand F.	2	2	2	0	0	0	0	0	0
Champion Fertilizer Co., The	1	0	1	0	0	0	0	0	0
Cincinnati Phosphate Co., The	7	4	6	1	0	0	0	0	0
Continental Fertilizer Co.	5	3	4	1	0	0	0	0	0
Darling & Company	11	5	10	1	0	0	0	0	0
D. & K. Fertilizer Co.	3	1	3	0	1	1	0	0	0
Empire Carbon Works	1	1	1	0	0	0	0	0	0
Ewing, Geo. M.	1	0	1	0	0	0	0	0	0
Farmers Fertilizer Co.	6	2	6	0	4	0	0	0	0
Federal Chemical Co.	14	6	9	4	1	2	2	0	0
Fox Chemical Co.	13	2	9	4	0	2	1	0	0
Globe Fertilizer Co.	13	3	10	2	0	3	1	0	0
Hardy Packing Co., The	6	4	5	1	0	1	0	0	0
Hess & Bro., S. M.	10	8	10	0	1	0	0	0	0
Hirsh, Steln & Co.	20	15	19	1	0	0	0	0	0
Hopkins Fertilizer Co.	9	2	7	1	1	1	0	0	0
Indianapolis Fertilizer Co.	1	1	1	0	0	0	0	0	0
Indianapolis Rendering Co.	4	2	3	1	0	0	0	0	0
Indiana Tanking Co.	3	1	1	2	0	1	1	0	0
Jarecki Chemical Co., The	11	7	10	1	0	0	0	0	0
Jones, J. B.	1	0	0	0	1	1	1	0	0
Jones, Robin	1	1	1	0	0	0	0	0	0
Jones Fertilizing Co., The	5	5	5	0	0	0	0	0	0
Kaufman Fertilizer Co.	8	7	8	0	0	0	0	0	0
Louisville Fertilizer Co.	9	6	9	0	0	0	0	0	0
Mace & Mansfield	1	0	0	1	0	0	0	0	0
Major Bros.	1	1	1	0	0	0	0	0	0
Mathiason M'fg. Co., P. B.	1	1	1	0	0	0	0	0	0
Mayer Fertilizer Co., The	9	4	5	2	2	3	2	0	0
Michigan Carbon Works	11	8	11	0	0	0	0	0	0
Monarch Fertilizer Co.	10	2	6	4	0	5	2	0	0
Morris & Company	17	7	15	2	0	0	0	0	0
Mt. Pleasant Fertilizer Co.	7	5	6	1	0	0	0	0	0
Norris Fertilizer Co.	2	1	2	0	0	0	0	0	0
North Western Fertilizing Co.	11	6	9	1	1	1	0	0	0
Ohio Farmers Fertilizer Co.	7	3	7	0	0	0	0	0	0
Packer Fertilizer Co., (Indianapolis)	7	4	6	1	0	1	0	0	0
Packers Fertilizer Association	7	6	7	0	0	0	0	0	0
Packers Fertilizer Co., (Cincinnati)	4	3	4	0	1	0	0	0	0
Pero & Stoecker	3	1	3	0	0	0	0	0	0
Rauh & Sons Fertilizer Co., The E.	13	4	10	3	0	4	0	0	0
Read Phosphate Co.	6	3	5	1	0	2	1	0	0
Schmadel, Louis	3	1	2	1	0	2	1	0	0
Smith & Company	1	1	1	0	0	0	0	0	0
Southern Indiana Fertilizer Co.	3	0	0	2	1	2	2	0	0
Southern Seed Co.	1	0	1	0	0	0	0	0	0
Swift & Company	22	6	15	7	0	4	0	0	0
Tennessee Chemical Co.	4	2	4	0	1	1	0	0	0
Turley Co., T. J.	2	0	2	0	0	0	0	0	0
Tuscarora Fertilizer Co.	7	2	4	3	0	0	0	0	0
Western Fertilizer Works	3	0	2	1	1	1	0	0	0
Wulchet Fertilizer Co.	6	2	6	0	2	1	0	0	0
Totals	429	207	354	63	13	61	24	0	0

TABLE IV. Summary of Results of Inspection for Year 1908.

MANUFACTURER.	No. of Samples Collected.	No. Equal to Guarantee in Every Particular.	No. Equal in Value to Guarantee.	No. Within 10% of Value of Guarantee.	No. Not Within 10% of Value of Guarantee.	No. With 1 or More Ingredients 20% Below Guarantee.	No. With 1 or More Ingredients 30% Below Guarantee.	No. With 1 or More Ingredients 50% Below Guarantee.
Abbott & Martin Rendering Co., The.....	11	8	11	-----	0	1	0	0
Akin Packing Co.....	1	0	1	-----	0	0	0	0
Alles, Rudy.....	3	1	1	1	1	1	1	0
American Agricultural Chemical Co., The.....	35	26	32	3	0	1	0	0
American Agricultural Chemical Co., The Great Eastern Fertilizer Branch.....	1	1	1	-----	0	0	0	0
American Agricultural Chemical Co., The M. E. Wheeler & Co., Branch.....	4	4	4	-----	0	0	0	0
American Glue Co.....	1	0	1	-----	0	1	0	0
American Reduction Co.....	3	1	3	-----	0	1	1	0
Armour Fertilizer Works, The.....	68	32	52	11	3	4	2	0
Atlas Fertilizer Co.....	6	0	3	2	1	4	1	0
Bash Fertilizer Co.....	19	3	6	10	3	9	5	2
Bash Packing Co.....	40	4	10	14	16	26	15	5
Bausback & Sons, Robert.....	1	1	1	-----	0	0	0	0
Bender, Joe.....	4	1	3	1	0	0	0	0
Benz, Michael.....	1	1	1	-----	0	0	0	0
Bonday & Co., James, Jr.....	1	1	1	-----	0	0	0	0
Bowker Fertilizer Co.....	31	25	29	2	0	0	0	0
Buhrer, Ferdinand F.....	4	2	4	-----	0	1	0	0
Champion Fertilizer Co., The.....	1	0	1	-----	0	0	0	0
Chicago Fertilizer Co., The.....	5	1	5	-----	0	0	0	0
Cincinnati Phosphate Co.....	18	11	14	3	0	0	0	0
Continental Fertilizer Co.....	8	5	7	1	0	0	0	0
Corya, J. W.....	3	1	3	-----	0	0	0	0
Darling & Company.....	20	8	18	2	0	0	0	0
D. & K. Fertilizer Co.....	4	3	4	-----	0	1	1	0
Dryfus Packing & Provision Co.....	1	1	1	-----	0	0	0	0
Empire Carbon Works.....	1	1	1	-----	0	0	0	0
Ewing, Geo. M.....	1	0	1	-----	0	0	0	0
Farmers Fertilizer Co.....	20	10	18	1	1	4	0	0
Farmers Phosphate Co.....	1	0	0	1	0	0	0	0
Federal Chemical Co.....	35	8	20	14	2	10	4	0
Fox Chemical Co.....	24	6	17	6	1	4	1	0
Globe Fertilizer Co.....	41	10	28	13	1	8	1	0
Hardy Packing Co., The.....	11	6	10	1	0	1	0	0
Hess & Bro., S. M.....	12	10	12	-----	0	1	0	0
Hilgemeyer & Bro., Frank.....	1	0	1	-----	0	1	0	0
Hirsh, Stein & Co.....	21	15	20	1	0	1	0	0
Hopkins Fertilizer Co.....	22	4	17	3	2	5	0	0
Hubbell & Sons Fertilizer Co., L. W.....	7	6	6	1	0	0	0	0
Indianapolis Fertilizer Co.....	1	1	1	-----	0	0	0	0
Indianapolis Rendering & Fertilizer Co.....	9	4	8	1	0	0	0	0
Indiana Tanking Co.....	3	1	1	2	0	1	1	0
Jarecki Chemical Co., The.....	30	17	28	1	1	0	0	0
Jones, J. B.....	1	0	0	-----	1	1	1	0
Jones, Robin.....	1	1	1	-----	0	0	0	0
Jones Fertilizing Co., The.....	8	5	8	-----	0	1	0	0
Kalamazoo Rendering & Fertilizer Co.....	1	0	0	1	0	1	1	0
Kaufman Fertilizer Co.....	9	3	9	-----	0	0	0	0
Louisville Fertilizer Co.....	19	9	17	2	0	0	0	0
Mace & Mansfield.....	2	1	1	-----	0	0	0	0
Major Bros.....	2	2	2	-----	0	0	0	0
Mathiason M'fg. Co., P. B.....	1	1	1	-----	0	0	0	0
Mayer Fertilizer Co., The.....	13	4	9	3	3	3	2	0
Michigan Carbon Works.....	22	13	19	2	1	0	0	0
Monarch Fertilizer Co.....	17	2	7	8	2	9	3	0
Morris & Company.....	29	11	26	3	0	1	0	0
Mt. Pleasant Fertilizer Co.....	7	5	6	1	0	0	0	0
Natural Guano Company.....	1	0	1	-----	0	0	0	0
Norris Fertilizer Co.....	2	1	2	-----	0	0	0	0
North Western Fertilizing Co.....	11	6	9	2	0	1	0	0
Ohio Farmers Fertilizer Co.....	26	13	20	5	1	1	0	0
Packer Fertilizer Co., (Indianapolis).....	15	8	14	1	0	0	0	0
Packers Fertilizer Association.....	22	13	16	4	2	1	0	0
Packers Fertilizer Co., (Cincinnati).....	17	7	12	5	0	1	0	0

TABLE IV. Summary of the Results of Inspection for year 1908, Concluded

MANUFACTURER.	No. of Samples Collected.	No. Equal to Guarantee in Every Particular.	No. Equal in Value to Guarantee.	No. Within 10% of Value of Guarantee.	No. Not Within 10% of Value of Guarantee.	No. With 1 or More Ingredients 20% Below Guarantee.	No. With 1 or More Ingredients 30% Below Guarantee.	No. With 1 or More Ingredients 50% Below Guarantee.
Pero & Stoecker	4	3	4	5	0	0	0	0
Rauh & Sons Fertilizer Co., The B.....	28	13	23	5	0	5	1	0
Read Phosphate Co.....	3	3	5	3	0	3	1	0
Schmadel, Louis	3	1	3	1	0	2	1	0
Smith & Company.....	3	1	3	1	0	1	0	0
Southern Indiana Fertilizer Co.....	5	0	0	4	1	4	4	1
Southern Seed Co.....	1	0	1	---	0	0	0	0
Star Tankage & Fertilizer Works.....	1	1	1	---	0	0	0	0
Swift & Company.....	45	13	27	16	2	3	1	0
Tennessee Chemical Co.....	3	3	3	---	0	1	1	0
Turley Co., T. J.....	2	0	2	---	0	0	0	0
Tuscarora Fertilizer Co.....	16	4	10	6	0	0	0	0
Ward & Co., Montgomery.....	1	0	0	1	0	1	0	0
Weldman, Augustus.....	1	0	1	---	0	0	0	0
Western Fertilizer Works.....	5	0	3	---	2	2	1	0
Wuichet Fertilizer Co., The.....	14	2	11	3	0	2	1	0
Totals	901	391	693	171	47	134	51	8

TABLE V. Summary of Samples One Dollar or More Below Value of Guarantee in 1908.

MANUFACTURER.	No. of Samples Collected.	No. of Brands One to Two Dollars Below Value of Guarantee.	No. of Brands Two to Three Dollars Below Value of Guarantee.	No. of Brands Three to Four Dollars Below Value of Guarantee.	No. of Brands Four to Five Dollars Below Value of Guarantee.	No. of Brands Five to Six Dollars Below Value of Guarantee.	No. of Brands Six to Seven Dollars Below Value of Guarantee.	No. of Brands Seven to Eight Dollars Below Value of Guarantee.	No. of Brands Eight to Nine Dollars Below Value of Guarantee.	No. of Brands One Dollar or More Above Value of Guarantee.
Abbott & Martin Rendering Co.....	11	0	0	0	0	0	0	0	0	10
Akin Packing Co.....	1	0	0	0	0	0	0	0	0	1
Alles, Rudy.....	3	0	0	0	0	1	0	0	0	1
American Agricultural Chemical Co.....	85	2	1	0	0	0	0	0	0	25
American Agricultural Chemical Co., The Great Eastern Fertilizer Branch.....	1	0	0	0	0	0	0	0	0	1
American Agricultural Chemical Co., The M. E. Wheeler & Co. Branch.....	4	0	0	0	0	0	0	0	0	3
American Glue Co.....	1	0	0	0	0	0	0	0	0	1
American Reduction Co.....	3	0	0	0	0	0	0	0	0	2
Armour Fertilizer Works, The.....	68	4	2	1	0	0	0	1	0	27
Atlas Fertilizer Co.....	6	1	0	1	0	0	0	0	0	0
Bash Fertilizer Co.....	19	2	2	0	2	1	0	0	0	4
Bash Packing Co.....	40	2	2	2	6	2	2	2	1	4
Bausback & Sons, Robert.....	1	0	0	0	0	0	0	0	0	1
Bender, Joe.....	4	0	0	0	0	0	0	0	0	2
Benz, Michael.....	1	0	0	0	0	0	0	0	0	1
Bonday & Co., James, Jr.....	1	0	0	0	0	0	0	0	0	1
Bowker Fertilizer Co.....	31	1	0	0	0	0	0	0	0	28
Bubner, Ferdinand F.....	4	0	0	0	0	0	0	0	0	4
Champion Fertilizer Co., The.....	1	0	0	0	0	0	0	0	0	1
Chicago Fertilizer Co., The.....	5	0	0	0	0	0	0	0	0	4
Cincinnati Phosphate Co.....	16	0	0	0	0	0	0	0	0	13
Continental Fertilizer Co.....	8	0	0	0	0	0	0	0	0	7
Corya, J. W.....	3	0	0	0	0	0	0	0	0	1
Darling & Company.....	20	0	0	0	0	0	0	0	0	14
D. & K. Fertilizer Co.....	4	0	0	0	0	0	0	0	0	2
Dryfus Packing & Provision Co.....	1	0	0	0	0	0	0	0	0	1
Empire Carbon Works.....	1	0	0	0	0	0	0	0	0	1
Ewing, Geo. M.....	1	0	0	0	0	0	0	0	0	0
Farmers Fertilizer Co.....	20	1	1	0	0	0	0	0	0	16
Farmers Phosphate Co.....	1	0	0	0	0	0	0	0	0	0
Federal Chemical Co.....	36	5	0	0	0	0	0	0	0	12
Fox Chemical Co.....	24	2	0	0	0	0	0	0	0	8
Globe Fertilizer Co.....	41	1	1	0	0	0	0	0	0	21
Hardy Packing Co., The.....	11	0	0	0	0	0	0	0	0	9
Hess & Bro., S. M.....	12	0	0	0	0	0	0	0	0	11
Hilgemier & Bro., Frank.....	1	0	0	0	0	0	0	0	0	0
Hirsch, Stein & Co.....	21	0	0	0	0	0	0	0	0	17
Hopkins Fertilizer Co.....	22	0	2	0	0	0	0	0	0	8
Hubbell & Sons Fertilizer Co., L. W.....	7	0	0	0	0	0	0	0	0	5
Indianapolis Fertilizer Co.....	1	0	0	0	0	0	0	0	0	1
Indianapolis Rendering Co.....	9	0	0	0	0	0	0	0	0	6
Indiana Tanking Co.....	3	1	0	0	0	0	0	0	0	1
Jarecki Chemical Co., The.....	30	0	0	1	0	0	0	0	0	14
Jones, J. B.....	1	0	0	1	0	0	0	0	0	0
Jones, Robin.....	1	0	0	0	0	0	0	0	0	0
Jones Fertilizing Co., The.....	8	0	0	0	0	0	0	0	0	7
Kalamazoo Rendering & Fertilizing Co.....	1	0	1	0	0	0	0	0	0	0
Kaufman Fertilizer Co.....	9	0	0	0	0	0	0	0	0	9
Louisville Fertilizer Co.....	19	0	0	0	0	0	0	0	0	13
Mace & Mansfield.....	2	0	0	0	0	0	0	0	0	0
Major Bros.....	2	0	0	0	0	0	0	0	0	2
Mathiason M'fg. Co., P. B.....	1	0	0	0	0	0	0	0	0	0
Mayer Fertilizer Co., The.....	12	3	2	0	0	0	0	0	0	2
Michigan Carbon Works.....	22	1	0	0	0	0	0	0	0	17
Monarch Fertilizer Co.....	17	2	2	0	1	0	0	0	0	2
Morris & Co.....	20	0	1	0	0	0	0	0	0	20
Mt. Pleasant Fertilizer Co.....	7	0	0	0	0	0	0	0	0	5
Natural Guano Co.....	1	0	0	0	0	0	0	0	0	0

F.—The last column in this table shows the number of brands \$1 or more above the value of the guarantee.

TABLE V, Summary of Samples One Dollar or More Below Value of Guarantee in 1908—Concluded.

MANUFACTURER.	No. of Samples Collected.	No. of Brands One to Two Dollars Below Value of Guarantee.	No. of Brands Two to Three Dollars Below Value of Guarantee.	No. of Brands Three to Four Dollars Below Value of Guarantee.	No. of Brands Four to Five Dollars Below Value of Guarantee.	No. of Brands Five to Six Dollars Below Value of Guarantee.	No. of Brands Six to Seven Dollars Below Value of Guarantee.	No. of Brands Seven to Eight Dollars Below Value of Guarantee.	No. of Brands Eight to Nine Dollars Below Value of Guarantee.	No. of Brands One Dollar or More Above Value of Guarantee.
Norris Fertilizer Co.....	2	0	0	0	0	0	0	0	0	2
North Western Fertilizing Co.....	26	1	0	1	0	0	0	0	0	9
Ohio Farmers Fertilizer Co.....	15	0	0	0	0	0	0	0	0	12
Packer Fertilizer Co. (Indianapolis)....	11	0	0	0	0	0	0	0	0	6
Packers Fertilizer Association.....	22	2	2	0	0	0	0	0	0	12
Packers Fertilizer Co. (Cincinnati)....	17	0	0	0	0	0	0	0	0	2
Pero & Stoecker.....	4	0	0	0	0	0	0	0	0	4
Rauh & Sons Fertilizer Co., The E.....	23	1	0	0	0	0	0	0	0	17
Read Phosphate Co.....	8	0	0	0	0	0	0	0	0	2
Schmadel, Louis.....	3	0	0	0	0	0	0	0	0	2
Smith & Company.....	3	1	0	0	0	0	0	0	0	1
Southern Indiana Fertilizer Co.....	5	3	1	0	0	0	0	0	0	0
Southern Seed Co.....	1	0	0	0	0	0	0	0	0	0
Star Tankage & Fertilizer Works.....	1	0	0	0	0	0	0	0	0	1
Swift & Company.....	45	6	0	0	0	1	0	0	0	14
Tennessee Chemical Co.....	8	0	0	0	0	0	0	0	0	5
Turley Co., T. J.....	2	0	0	0	0	0	0	0	0	2
Tuscarora Fertilizer Co.....	16	1	0	0	0	0	0	0	0	6
Ward & Co., Montgomery.....	1	1	0	0	0	0	0	0	0	0
Weldman, Augustus.....	1	0	0	0	0	0	0	0	0	0
Western Fertilizer Works.....	5	1	0	1	0	0	0	0	0	0
Wulchet Fertilizer Co., The.....	14	1	0	0	0	0	0	0	0	8
Totals.....	901	54	23	8	9	2	3	3	1	472

F—The last column in this table shows the number of brands \$1 or more above the value of the guarantee.

TABLE VI. Report of Inspection of Fertilizers Collected

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Abbott & Martin Rendering Co., The, Columbus, Ohio.—									
Peerless Bone and Potash.....	2850		Guaranteed	0.4	2.5	8.0	1.0	----	----
*Peerless Bone and Potash.....	2850 6394	Centerville	Found	0.6	3.0	8.1	1.9	----	----
*Peerless Bone and Potash.....	2850 6398	Hayden	Found	0.5	3.7	8.8	1.3	----	----
Peerless Bone and Potash.....	2850 6500	Huber Station	Found	0.5	3.0	8.6	2.5	----	----
Peerless Bone and Potash.....	2850 6384	Seymour	Found	0.4	3.0	8.7	1.9	----	----
Render's Bone Meal.....	2907		Guaranteed	1.6	-----	-----	-----	-----	30.0
Render's Bone Meal.....	2907 6792	Grange Hall	Found	2.9	-----	-----	-----	-----	19.3
Abbott's Ideal Grain Grower.....	3213		Guaranteed	0.8	1.0	7.0	1.0	-----	-----
Abbott's Ideal Grain Grower.....	3213 6502	Huber Station	Found	0.7	1.0	7.3	2.3	-----	-----
Tobacco and Potato Special.....	3419		Guaranteed	1.6	4.0	8.0	1.0	-----	-----
*Tobacco and Potato Special.....	3419 6384	Henryville	Found	1.8	5.8	9.2	0.5	-----	-----
No. 1 Star Phosphate.....	3714		Guaranteed	2.0	10.0	1.0	-----	-----	-----
No. 1 Star Phosphate.....	3714 6503	Huber Station	Found	2.4	10.6	1.6	-----	-----	-----
York Special.....	3953		Guaranteed	0.8	7.0	8.0	-----	-----	-----
York Special.....	3953 6793	Grange Hall	Found	0.8	7.8	9.3	1.0	-----	-----
Universal Fertilizer.....	3954		Guaranteed	0.8	4.0	8.0	-----	-----	-----
Universal Fertilizer.....	3954 6794	Grange Hall	Found	0.8	4.1	9.5	1.0	-----	-----
Dissolved Bone and Potash.....	3956		Guaranteed	5.0	10.0	-----	-----	-----	-----
*Dissolved Bone and Potash.....	3956 6296	Centerville	Found	5.7	10.8	1.8	-----	-----	-----
Akin Packing Co., Evansville, Ind.—									
Bone Meal.....	4312		Guaranteed	1.6	3.0	8.0	4.0	-----	-----
Bone Meal.....	4312 6315	Evansville	Found	2.8	9.3	6.7	6.1	-----	-----
Alles, Rudy, New Albany, Ind.—									
The Butcher Boy.....	4055		Guaranteed	2.6	-----	-----	-----	-----	23.5
*The Butcher Boy.....	4055 6149	New Albany	Found	2.9	-----	-----	-----	-----	24.4
The Butcher Boy.....	4055 6556	New Albany	Found	2.5	-----	-----	-----	-----	21.7
The Butcher Boy.....	4055 6350	New Albany	Found	2.4	-----	-----	-----	-----	15.5
American Agricultural Chemical Co., The, New York, N. Y.—									
Cleveland Dryer, Phospho Bone.....	2802		Guaranteed	0.8	1.0	10.0	-----	-----	-----
*Cleveland Dryer, Phospho Bone.....	2802 6418	Avilla	Found	1.1	1.0	10.5	1.5	-----	-----
Cleveland Dryer, XXX Superphos- phate.....	2803		Guaranteed	-----	-----	14.0	-----	-----	-----
Cleveland Dryer, XXX Superphos- phate.....	2803 6500	Connersville	Found	-----	-----	15.9	0.4	-----	-----
Cleveland Dryer, Ohio Seed Maker with Potash.....	2804		Guaranteed	1.6	2.0	8.0	-----	-----	-----
*Cleveland Dryer, Ohio Seed Maker with Potash.....	2804 6352	Madison	Found	2.0	2.3	8.0	2.4	-----	-----
*Cleveland Dryer, Ohio Seed Maker with Potash.....	2804 6428	Monon	Found	1.8	2.0	9.3	1.0	-----	-----
Cleveland Dryer, Forest City Buck- eye Ammoniated Bone Super- phosphate.....	2806		Guaranteed	2.4	2.0	9.0	-----	-----	-----
*Cleveland Dryer, Forest City Buck- eye Ammoniated Bone Super- phosphate.....	2806 6353	Madison	Found	2.5	2.8	9.7	2.5	-----	-----
Zell's Dissolved Bone Phosphate.....	2809		Guaranteed	-----	-----	14.0	-----	-----	-----
Zell's Dissolved Bone Phosphate.....	2809 6543	St. Paul	Found	-----	-----	15.7	0.7	-----	-----

—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
American Agricultural Chemical Co., The, New York, N. Y.—									
Zell's Electric Phosphate	2810			Guaranteed	2.0	10.0			
Zell's Electric Phosphate	2810 6541	St. Paul		Found	1.9	10.9	3.4		
Bradley's Corn and Wheat Phos- phate	2813			Guaranteed	0.8	1.0	10.0		
Bradley's Corn and Wheat Phos- phate	2813 6863	Columbus		Found	0.9	1.3	10.6	3.7	
Bradley's B. D. Sea Fowl Guano.	2814			Guaranteed	2.0	1.5	9.0		
*Bradley's B. D. Sea Fowl Guano.	2814 6144	New Albany		Found	2.1	1.9	8.3	1.3	
Bradley's Alkaline Bone and Pot- ash	2815			Guaranteed	2.0	10.0			
*Bradley's Alkaline Bone and Pot- ash	2815 6107	Batesville		Found	2.3	9.8	4.7		
Bradley's Alkaline Bone and Pot- ash	2815 6613	Marengo		Found	2.0	10.4	4.2		
Bradley's Dissolved Bone with Potash	2816			Guaranteed	1.0	2.0	8.0		
*Bradley's Dissolved Bone with Potash	2816 6108	Batesville		Found	1.4	2.2	8.2	3.0	
*Bradley's Dissolved Bone with Potash	2816 6145	New Albany		Found	1.1	2.3	8.3	1.9	
Bradley's Dissolved Bone with Potash	2816 6554	Corydon		Found	0.8	2.0	7.5	1.4	
Bradley's Niagara Phosphate	2817			Guaranteed	0.8	1.0	7.0		
*Bradley's Niagara Phosphate	2817 6109	Batesville		Found	1.0	1.1	6.8	2.9	
*Bradley's Niagara Phosphate	2817 6146	New Albany		Found	1.3	1.5	7.7	2.1	
Bradley's Niagara Phosphate	2817 6555	Corydon		Found	0.9	1.0	7.3	1.5	
Bradley's Potato and Root Phos- phate	2819			Guaranteed	0.8	4.0	8.0		
*Bradley's Potato and Root Phos- phate	2819 6110	Batesville		Found	1.0	4.6	7.9	2.3	
Bradley's Potato and Root Phos- phate	2819 6586	Corydon		Found	1.0	3.7	8.1	1.9	
Bradley's Soluble Dissolved Bone.	2821			Guaranteed			14.0		
Bradley's Soluble Dissolved Bone.	2821 6614	Marengo		Found			18.1	3.3	
Cumberland Bone and Potash	2823			Guaranteed	2.0	10.0			
*Cumberland Bone and Potash	2823 6036	Leipsic		Found	2.3	10.3	4.3		
Cumberland Guano	2824			Guaranteed	1.0	2.0	8.0		
*Cumberland Guano	2824 6037	Leipsic		Found	1.3	2.4	8.3	2.7	
*Cumberland Guano	2824 6319	Seymour		Found	1.2	2.6	8.4	3.0	
Cumberland Hawkeye Fertilizer	2825			Guaranteed	0.8	1.0	7.0		
*Cumberland Hawkeye Fertilizer	2825 6038	Leipsic		Found	1.0	1.1	7.6	2.4	
Ground Bone	2870			Guaranteed	2.4				20.0
Ground Bone	2870 6587	Corydon		Found	2.3				18.4
Reese Crown Phosphate and Pot- ash	2882			Guaranteed	2.0	11.0			
Reese Crown Phosphate and Pot- ash	2882 6499	Connersville		Found	2.2	11.3	2.3		
Special Bone Meal	3600			Guaranteed	1.2				25.0
*Special Bone Meal	3600 6039	Leipsic		Found	1.2				27.3
Special Bone Meal	3600 6588	Corydon		Found	1.2				27.1
The A. A. C. Co. High Grade Bone and Potash	3835			Guaranteed	5.0	10.0	2.0		
The A. A. C. Co. High Grade Bone and Potash	3835 6796	Madison		Found	4.6	10.8	2.8		
Cleveland Dryer Works, Potato, Tobacco and General Crop Fer- tilizer	3878			Guaranteed	0.8	4.0	8.0		
*Cleveland Dryer Works, Potato, Tobacco and General Crop Fer- tilizer	3878 6354	Madison		Found	1.0	4.0	8.2	2.7	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
American Agricultural Chemical Co., The, New York, N. Y.—									
Cleveland Dryer Works, Potato, Tobacco and General Crop Fertilizer	3878	6498	Connersville	Found	1.0	4.1	8.4	2.4	---
Indiana Onion and Vegetable Fertilizer	4088	---	---	Guaranteed	0.8	10.0	5.0	2.0	---
*Indiana Onion and Vegetable Fertilizer	4088	6111	Batesville	Found	1.0	10.8	5.5	2.2	---
Indiana Onion and Vegetable Fertilizer	4088	6860	Columbus	Found	1.0	10.6	6.2	1.7	---
New York State Special	4088	---	---	Guaranteed	0.8	3.0	8.0	2.0	---
New York State Special	4088	6606	Corydon	Found	0.9	8.5	8.2	1.9	---
New York State Special	4088	6796	Madison	Found	1.1	8.4	8.2	2.5	---
American Agricultural Chemical Co., The, Great Eastern Fertilizer Branch, Rutland, Vt.—									
Great Eastern Corn Fertilizer	3455	---	---	Guaranteed	1.6	2.0	8.0	1.0	---
*Great Eastern Corn Fertilizer	3455	6860	Dublin	Found	1.8	2.2	8.5	2.4	---
M. E. Wheeler & Company, Branch of The American Agricultural Chemical Co., New York, N. Y.—									
Royal Wheat Grower	3098	---	---	Guaranteed	0.8	2.0	8.0	1.0	---
*Royal Wheat Grower	3098	6143	Borden	Found	0.9	2.1	8.6	2.4	---
Royal Wheat Grower	3098	6738	Delaware	Found	1.1	2.2	8.4	2.0	---
Corn Fertilizer	3097	---	---	Guaranteed	1.6	2.0	8.0	1.0	---
*Corn Fertilizer	3097	6386	Union City	Found	1.9	2.2	8.6	2.4	---
Potato Manure	3098	---	---	Guaranteed	2.0	2.0	8.0	1.0	---
*Potato Manure	3098	6386	Union City	Found	2.0	2.2	8.6	2.0	---
American Glue Company, The, Chicago, Ill.—									
Union Steamed Bone Meal	4190	---	---	Guaranteed	0.8	---	---	---	28.0
Union Steamed Bone Meal	4190	6668	Jasper	Found	0.6	---	---	---	21.9
American Reduction Co., of Pittsburg, Pa., Pittsburg, Pa.—									
Iron City	3129	---	---	Guaranteed	2.0	1.5	7.5	0.5	---
Iron City	3129	6667	Greensburg	Found	1.4	2.2	8.5	2.7	---
Century Bone and Potash	3751	---	---	Guaranteed	1.0	2.5	6.5	0.5	---
Century Bone and Potash	3751	6556	Greensburg	Found	1.2	4.0	8.4	2.1	---
Fine Ground Bone	3778	---	---	Guaranteed	1.2	---	---	---	12.0
Fine Ground Bone	3778	6556	Greensburg	Found	1.1	---	---	---	24.5
Armour Fertilizer Works, The, Chicago, Ill.—									
Raw Bone	2908	---	---	Guaranteed	2.7	---	---	---	28.0
*Raw Bone	2908	6384	Liberty	Found	2.8	---	---	---	24.9
*Raw Bone	2908	6040	Orleans	Found	2.7	---	---	---	24.1
Raw Bone	2908	6607	Milltown	Found	4.1	---	---	---	24.0
Bone Meal	2904	---	---	Guaranteed	2.4	---	---	---	24.0
*Bone Meal	2904	6088	Greensburg	Found	2.5	---	---	---	27.9
Bone Meal	2904	6582	Brookville	Found	2.4	---	---	---	24.5
Bone Meal	2904	6569	Jasper	Found	2.6	---	---	---	28.7

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number	Sample Taken at	Official Inspection B.	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
Armour Fertilizer Works, The, Chicago, Ill.—								
*Fruit and Root Crop Special.....	2906	Guaranteed		1.6	5.0	8.0	2.0	
*Fruit and Root Crop Special.....	2906 6310 Scottsburg	Found		2.0	6.1	8.1	1.7	
*Fruit and Root Crop Special.....	2906 6320 Noblesville	Found		1.9	5.7	8.5	1.7	
Fruit and Root Crop Special.....	2906 6770 North Vernon	Found		1.6	5.7	7.9	1.2	
All Soluble	2907	Guaranteed		2.8	4.0	8.0	2.0	
All Soluble	2907 6756 Osgood	Found		3.0	4.4	7.3	1.8	
Star Phosphate	2908	Guaranteed				14.0	2.0	
*Star Phosphate	2908 6024 Greensburg	Found				14.5	1.2	
*Star Phosphate	2908 6041 Orleans	Found				14.3	1.3	
Star Phosphate	2908 6526 Julietta	Found				14.8	5.1	
Star Phosphate	2908 6632 English	Found				14.9	2.3	
Phosphate and Potash.....	2909	Guaranteed		2.0	10.0	2.0		
*Phosphate and Potash.....	2909 6025 Greensburg	Found		2.1	9.5	1.5		
*Phosphate and Potash.....	2909 6243 English	Found		2.1	10.0	1.2		
Phosphate and Potash.....	2909 6658 Jasper	Found		1.8	10.3	1.2		
Grain Grower	2910	Guaranteed		1.6	2.0	8.0	2.0	
*Grain Grower	2910 6026 Greensburg	Found		2.0	2.1	8.3	1.8	
*Grain Grower	2910 6043 Orleans	Found		1.7	2.3	8.3	1.8	
*Grain Grower	2910 6064 Huntingburg	Found		1.9	2.5	8.0	1.7	
*Grain Grower	2910 6112 Morris	Found		1.6	2.5	7.3	3.5	
*Grain Grower	2910 6339 North Vernon	Found		2.2	2.0	6.0	5.6	
Grain Grower	2910 6525 Julietta	Found		1.5	2.0	8.6	1.9	
Grain Grower	2910 6768 North Vernon	Found		1.6	2.3	8.3	2.1	
Ammoniated Bone with Potash.....	2911	Guaranteed		2.4	2.0	6.0	2.0	
*Ammoniated Bone with Potash.....	2911 6043 Orleans	Found		2.5	2.9	5.7	2.6	
Ammoniated Bone with Potash.....	2911 6321 Noblesville	Found		2.4	2.8	6.4	2.1	
Ammoniated Bone with Potash.....	2911 6371 Orleans	Found		2.1	2.8	6.8	1.7	
Wheat, Corn and Oat Special.....	2928	Guaranteed		0.8	1.0	7.0	2.0	
*Wheat, Corn and Oat Special.....	2928 6147 New Albany	Found		1.1	1.7	8.0	2.0	
Wheat, Corn and Oat Special.....	2928 6549 Montgomery	Found		1.1	0.9	7.2	1.8	
Wheat, Corn and Oat Special.....	2928 6903 Ridgeville	Found		0.9	1.8	7.0	1.4	
Bone, Blood and Potash.....	2928	Guaranteed		4.1	7.0	8.0	2.0	
*Bone, Blood and Potash.....	2928 6316 Brownstown	Found		2.4	5.3	8.3	3.5	
*Bone, Blood and Potash.....	2928 6421 Waterloo	Found		3.7	6.0	8.1	5.0	
Acid Bone Meal	3020	Guaranteed		1.6		11.0	7.0	
Acid Bone Meal	3020 6493 Liberty	Found		2.1		11.8	9.1	
German Kalnit	3312	Guaranteed			12.5			
*German Kalnit	3312 6006 Milford	Found			12.3			
German Kalnit	3312 6656 Jasper	Found			12.7			
Armour's Steamed Bone.....	3331	Guaranteed		1.6				20.0
*Armour's Steamed Bone.....	3331 6027 Greensburg	Found		1.4				12.5
*Armour's Steamed Bone.....	3331 6085 Huntingburg	Found		2.4				22.2
*Armour's Steamed Bone.....	3331 6148 New Albany	Found		2.0				22.3
Armour's Steamed Bone.....	3331 6554 New Albany	Found		2.7				21.6
Armour's Steamed Bone.....	3331 6679 Huntingburg	Found		1.9				19.1
Armour's Steamed Bone.....	3331 6826 Martinsville	Found		1.6				18.9
Muriate of Potash.....	3477	Guaranteed			48.0			
*Muriate of Potash.....	3477 6457 Winnamac	Found			53.3			
Muriate of Potash.....	3477 6769 North Vernon	Found			60.1			
Nitrate of Soda.....	3478	Guaranteed		15.6				
*Nitrate of Soda.....	3478 6427 Milford	Found			15.8			
Sulphate of Potash.....	3479	Guaranteed			50.0			
*Sulphate of Potash.....	3479 6044 Orleans	Found			47.9			
*Sulphate of Potash.....	3479 6422 Waterloo	Found			48.0			
*Sulphate of Potash.....	3479 6467 Hamlet	Found			49.4			
Hoosier Corn Grower.....	3480	Guaranteed		0.8	4.0	8.0	2.0	
*Hoosier Corn Grower.....	3480 6086 Huntingburg	Found		0.9	4.0	8.7	1.0	
*Hoosier Corn Grower.....	3480 6176 Brookville	Found		1.1	4.1	9.2	0.8	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Armour Fertilizer Works, The, Chi- cago, Ill.—									
*Hoosier Corn Grower	3480	6355	Aroma	Found	0.9	4.6	9.5	5.4	---
Hoosier Corn Grower	3480	6878	Huntingburg	Found	1.0	3.5	7.1	1.6	---
High Grade Potato	3509	---	---	Guaranteed	1.6	10.0	8.0	2.0	---
*High Grade Potato	3509	6010	Milford	Found	1.5	10.4	8.2	2.8	---
*High Grade Potato	3509	6323	Noblesville	Found	1.8	10.0	8.3	1.4	---
*High Grade Potato	3509	6356	Aroma	Found	1.7	12.5	8.5	1.3	---
High Grade Potato	3509	6879	Orleans	Found	1.5	5.1	11.0	0.1	---
Armour's Standard	3510	---	---	Guaranteed	0.8	8.0	8.0	2.0	---
Armour's Standard	3510	6816	Elberfeld	Found	0.9	3.3	8.0	8.3	---
Soluble Phosphate and Potash	3538	---	---	Guaranteed	4.0	10.0	---	---	---
*Soluble Phosphate and Potash	3538	6028	Greensburg	Found	5.0	9.5	1.3	---	---
Soluble Phosphate and Potash	3538	6516	Liberty	Found	3.1	10.3	0.6	---	---
Soluble Phosphate and Potash	3538	6829	English	Found	4.0	10.3	1.7	---	---
Crop Grower	3710	---	---	Guaranteed	1.3	2.0	8.0	---	---
Crop Grower	3710	6824	Martinsville	Found	1.3	1.9	7.6	8.0	---
Banner Brand	3729	---	---	Guaranteed	8.0	10.0	---	---	---
*Banner Brand	3729	6015	Nappanee	Found	8.5	10.1	1.5	---	---
*Banner Brand	3729	6235	Liberty	Found	6.8	9.6	1.7	---	---
Banner Brand	3729	6831	English	Found	8.0	9.8	1.6	---	---
Potash Trucker	3833	---	---	Guaranteed	0.8	8.0	8.0	---	---
*Potash Trucker	3833	6436	Rochester	Found	0.8	8.6	10.3	1.0	---
Bone and Potash Mixture	3938	---	---	Guaranteed	1.8	8.0	---	---	30.0
Bone and Potash Mixture	3938	6833	Hausstadt	Found	1.6	2.8	---	---	17.6
Bone and Potash Mixture	3938	6879	Ossian	Found	2.1	3.0	---	---	21.1
Atlas Fertilizer Company, Fort Wayne, Ind.—									
Atlas Raw Ground Bone	3797	---	---	Guaranteed	4.0	---	---	---	21.0
Atlas Raw Ground Bone	3797	6069	Jasper	Found	3.3	---	---	---	25.1
Atlas Grain Grower	3822	---	---	Guaranteed	1.2	2.0	8.0	1.0	---
*Atlas Grain Grower	3822	6239	Marengo	Found	1.4	1.6	7.0	0.8	---
Atlas Corn and Wheat Grower	3911	---	---	Guaranteed	2.0	2.0	5.0	1.0	---
*Atlas Corn and Wheat Grower	3911	6240	Marengo	Found	1.9	2.1	4.7	0.7	---
Atlas Corn and Wheat Grower	3911	6883	English	Found	1.6	2.0	6.5	0.7	---
Atlas Corn and Wheat Grower	3911	6865	Corydon Junction	Found	1.6	2.8	6.7	0.1	---
Atlas Onion Special	4137	---	---	Guaranteed	2.0	5.0	6.0	1.0	---
*Atlas Onion Special	4137	6241	Marengo	Found	1.4	3.7	6.2	0.3	---
Bash Fertilizer Co., Fort Wayne, Ind.—									
Bash's Corn and Wheat Grower	4073	---	---	Guaranteed	2.0	2.0	5.0	1.0	---
*Bash's Corn and Wheat Grower	4073	6087	Salem	Found	1.8	2.0	5.2	0.8	---
*Bash's Corn and Wheat Grower	4073	6269	Dublin	Found	1.7	1.9	5.7	0.2	---
*Bash's Corn and Wheat Grower	4073	6419	Avilla	Found	1.5	2.2	6.1	0.8	---
*Bash's Corn and Wheat Grower	4073	6477	East Germantown	Found	1.7	1.6	6.0	0.0	---
Bash's Corn and Wheat Grower	4073	6575	Georgetown	Found	1.6	1.9	5.4	0.3	---
Bash's Ideal Grain Grower	4151	---	---	Guaranteed	1.6	2.0	8.0	1.0	---
Bash's Ideal Grain Grower	4151	6906	English	Found	1.2	1.9	8.8	0.0	---
Bash's Ideal Grain Grower	4151	6906	Corydon Junction	Found	1.1	2.5	9.1	0.0	---
Bash's Grain Grower	4152	---	---	Guaranteed	1.3	2.0	8.0	1.0	---
*Bash's Grain Grower	4152	6476	East Germantown	Found	1.4	2.0	8.3	1.0	---
Bash's Grain Grower	4152	6684	Sunman	Found	1.3	1.8	9.0	0.2	---
Bash's Grain Grower	4152	6907	English	Found	1.3	2.6	8.8	0.0	---
Bash's Grain Grower	4152	6709	Dale	Found	1.4	1.8	9.0	0.3	---
Bash's Grain Grower	4152	6867	Corydon Junction	Found	1.3	2.1	8.9	0.1	---
Bash's Grain Grower	4152	6890	Lexington	Found	1.3	2.1	8.6	0.1	---
Bash's Wayne Raw Bone	4155	---	---	Guaranteed	4.0	---	---	---	21.3
Bash's Wayne Raw Bone	4155	6708	Dale	Found	3.6	---	---	---	30.9
Bash's Wayne Raw Bone	4155	6873	Salem	Found	3.4	---	---	---	21.3

1—See note page 519.

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Bash Fertilizer Co., Fort Wayne, Ind.—									
Bash's Onion, Tobacco and Truck Fertilizer	4159		Guaranteed	2.0	10.0	6.0	1.0	---	---
*Bash's Onion, Tobacco and Truck Fertilizer	4159 6158	Dale	Found	1.0	6.5	7.6	0.4	---	---
*Bash's Onion, Tobacco and Truck Fertilizer	4159 6441	Plymouth	Found	1.0	8.1	7.5	0.3	---	---
Bash's Onion Grower	4160		Guaranteed	1.5	8.0	8.0	1.0	---	---
*Bash's Onion Grower	4160 6420	Auburn	Found	0.9	6.7	7.6	0.3	---	---
Bash's Onion Special	4161		Guaranteed	3.0	5.0	6.0	1.0	---	---
*Bash's Onion Special	4161 6363	Dublin	Found	1.3	4.3	7.6	0.1	---	---
Bash Packing Co., Fort Wayne, Ind.—									
Potato and Garden Phosphate	3660		Guaranteed	2.3	10.5	---	---	---	8.3
*Potato and Garden Phosphate	3660 6415	Auburn	Found	1.0	6.8	---	---	---	8.2
Utility Brand Superphosphate	3668		Guaranteed	2.9	1.5	9.0	2.7	---	---
Utility Brand Superphosphate	3668 6695	English	Found	1.5	1.7	9.5	1.0	---	---
Wayne Raw Bone	3690		Guaranteed	4.0	---	---	---	---	21.3
*Wayne Raw Bone	3690 6347	Charlestown	Found	4.3	---	---	---	---	19.9
*Wayne Raw Bone	3690 6460	Walkerton	Found	6.3	---	---	---	---	14.5
Utility Phosphate	3449		Guaranteed	1.3	1.5	10.5	3.3	---	---
Utility Phosphate	3449 6123	Pekin	Found	1.4	1.8	8.1	0.9	---	---
Bash's Grain Grower	3598		Guaranteed	1.3	2.0	8.0	1.0	---	---
*Bash's Grain Grower	3598 6124	Pekin	Found	1.3	1.6	8.1	0.4	---	---
*Bash's Grain Grower	3598 6335	Union City	Found	1.1	2.0	8.8	0.4	---	---
*Bash's Grain Grower	3598 6357	Madison	Found	1.5	1.5	7.5	0.8	---	---
Bash's Grain Grower	3598 6574	Georgetown	Found	1.0	2.0	8.8	0.4	---	---
Bash's Grain Grower	3598 6683	Sunman	Found	1.3	3.1	9.7	0.0	---	---
Bash's Blood, Bone and Potash	3637		Guaranteed	2.0	2.0	8.0	1.0	---	---
*Bash's Blood, Bone and Potash	3637 6461	Walkerton	Found	1.4	2.3	8.3	0.5	---	---
*Bash's Blood, Bone and Potash ²	3637 6475	East Germantown	Found	1.7	1.9	7.9	1.3	---	---
Bash's Onion Grower	3717		Guaranteed	1.5	8.0	8.0	1.0	---	---
*Bash's Onion Grower	3717 5995	Columbia City	Found	1.3	5.9	6.3	0.5	---	---
*Bash's Onion Grower	3717 6244	Birdseye	Found	1.3	7.1	6.5	0.3	---	---
*Bash's Onion Grower	3717 6348	Roanoke	Found	1.1	7.3	8.0	0.1	---	---
*Bash's Onion Grower	3717 6414	St. Joe	Found	1.9	5.8	7.7	0.3	---	---
*Bash's Onion Grower	3717 6425	Kendallville	Found	1.0	5.9	8.8	0.3	---	---
Bash's Ideal Grain Grower	3795		Guaranteed	1.6	2.0	8.0	1.0	---	---
*Bash's Ideal Grain Grower	3795 6343	Birdseye	Found	1.3	1.7	8.0	0.3	---	---
*Bash's Ideal Grain Grower	3795 6402	Columbia City	Found	1.9	1.8	8.5	0.3	---	---
Bash's Ideal Grain Grower	3795 6598	Columbus	Found	1.3	2.3	9.3	0.4	---	---
Bash's Ideal Grain Grower	3795 6897	Winchester	Found	1.1	2.0	8.8	0.4	---	---
Bash's Crop Producer	3796		Guaranteed	1.8	3.0	7.0	1.0	---	---
Bash's Crop Producer	3796 6840	Patoka	Found	1.6	1.7	8.3	0.5	---	---
Bash's Odorless Lawn Fertilizer	3852		Guaranteed	2.0	---	6.0	1.0	---	---
*Bash's Odorless Lawn Fertilizer	3852 6336	Winchester	Found	2.0	---	4.3	0.3	---	---
Bash's Corn and Wheat Grower	3915		Guaranteed	2.0	2.0	5.0	1.0	---	---
*Bash's Corn and Wheat Grower	3915 5993	Dubois	Found	1.3	2.1	4.6	0.3	---	---
*Bash's Corn and Wheat Grower	3915 6122	St. Meinard	Found	1.3	2.3	4.4	0.3	---	---
Bash's Potato and Garden Special	3916		Guaranteed	2.3	10.0	8.0	1.0	---	---
*Bash's Potato and Garden Special	3916 6020	Ridgeville	Found	0.9	7.9	8.0	0.5	---	---
*Bash's Potato and Garden Special	3916 6337	Union City	Found	0.9	7.6	8.4	0.4	---	---
*Bash's Potato and Garden Special	3916 6423	Waterloo	Found	1.0	7.9	8.1	0.3	---	---
Bash's Tobacco Grower	3936		Guaranteed	2.0	2.0	5.0	1.0	---	---
*Bash's Tobacco Grower	3936 6156	Dale	Found	1.6	2.3	5.5	0.4	---	---
*Bash's Tobacco Grower	3936 6245	English	Found	1.6	2.1	5.3	0.7	---	---

²—See pages 519 and 520.

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Bash Packing Co., Fort Wayne, Ind.—									
Bash's High Grade Onion Fertilizer	3987			Guaranteed	2.0	10.0	6.0	1.0	---
*Bash's High Grade Onion Fertilizer	3987 6016	Nappanee		Found	1.0	8.2	7.1	0.4	---
*Bash's High Grade Onion Fertilizer	3987 6019	Ridgeville		Found	1.2	6.7	6.5	0.3	---
*Bash's High Grade Onion Fertilizer	3987 6264	Dublin		Found	1.1	7.6	7.6	0.1	---
Bash's High Grade Tobacco Special	3990			Guaranteed	1.2	5.0	8.0	1.0	---
*Bash's High Grade Tobacco Special	3990 6126	Pekin		Found	1.1	3.2	8.2	0.4	---
*Bash's High Grade Tobacco Special	3990 6157	Dale		Found	1.1	4.4	7.6	0.3	---
*Bash's High Grade Tobacco Special	3990 6328	Union City		Found	1.1	4.8	9.0	0.6	---
Bash's High Grade Tobacco Special	3990 6841	Lexington		Found	1.0	5.6	8.0	1.0	---
Bash's Muriate of Potash	4013			Guaranteed		49.0			---
*Bash's Muriate of Potash	4013 6261	Washington		Found		58.2			---
*Bash's Muriate of Potash	4013 6444	Culver		Found		54.7			---
*Bash's Muriate of Potash	4013 6463	Walkerton		Found		55.6			---
Bausback & Sons, Robert, Shelbyville, Ind.—									
Soft Bone	3007			Guaranteed	3.5				14.0
Soft Bone	3007 6726	Lookout		Found	4.9				17.1
Bender, Joe, Corydon, Ind.—									
Bender's Soluble Bone	4081			Guaranteed	0.4	1.5	10.0	1.0	---
*Bender's Soluble Bone	4081 6209	Corydon		Found	0.5	1.5	9.3	2.1	---
Bender's Soluble Bone	4081 6508	Corydon		Found	0.4	1.5	10.8	1.7	---
Bender's Packing House Bone	4174			Guaranteed	0.8	3.0	8.0	1.0	---
*Bender's Packing House Bone	4174 6210	Corydon		Found	0.8	2.9	9.6	2.1	---
Bender's Packing House Bone	4174 6570	Corydon		Found	1.1	3.7	7.2	1.6	---
Benz, Michael, Batesville, Ind.—									
M. Benz Fertilizer	4239			Guaranteed	2.0				12.0
M. Benz Fertilizer	4239 6624	Batesville		Found	3.1				24.0
Bonday & Co., James, Jr., Baltimore, Md.—									
No. 1 Syndicate Muriate of Potash	4037			Guaranteed		48.0			---
*No. 1 Syndicate Muriate of Potash	4037 6445	Culver		Found		49.6			---
Bowker Fertilizer Co., Boston, Mass.—									
Bowker's Fish Guano	2964			Guaranteed	0.7	3.0	8.0	1.0	---
*Bowker's Fish Guano	2964 6046	Leipsic		Found	0.9	3.2	9.4	1.8	---
*Bowker's Fish Guano	2964 6231	Cottage Grove		Found	1.1	3.2	7.8	2.0	---
Bowker's Fish Guano	2964 6644	English		Found	1.1	3.5	8.5	2.6	---
Bowker's Dissolved Bone Phosphate	2965			Guaranteed			10.0	1.0	---
*Bowker's Dissolved Bone Phosphate	2965 6078	Campbellsburg		Found			11.2	2.7	---
*Bowker's Dissolved Bone Phosphate	2965 6119	Marlah Hill		Found			10.2	4.7	---

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number	Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
Bowker Fertilizer Co., Boston, Mass.—							
Bowker's Dissolved Bone Phosphate	2955 6719 Dale	Found			11.3	4.4	
Bowker's Soluble Bone	2956	Guaranteed			14.0	1.0	
*Bowker's Soluble Bone	2956 6159 Dale	Found			15.4	2.1	
*Bowker's Soluble Bone	2956 6346 Marengo	Found			15.0	2.0	
Bowker's Soluble Bone	2956 6623 Batesville	Found			16.0	0.9	
Bowker's Soluble Bone	2956 6648 English	Found			15.7	0.7	
Harvest Bone	3287	Guaranteed	0.7	1.0	8.0		
*Harvest Bone	3287 6079 Campbellsburg	Found	1.0	1.1	7.9	2.7	
*Harvest Bone	3287 6113 Morris	Found	1.0	1.1	8.7	3.4	
Harvest Bone	3287 6504 Connersville	Found	1.0	1.0	8.5	2.4	
Harvest Bone	3287 6643 English	Found	1.0	1.0	8.8	2.9	
Bowker's Potash Fertilizer	3311	Guaranteed		5.0	10.0	1.0	
*Bowker's Potash Fertilizer	3311 6160 Dale	Found		5.5	9.8	2.7	
*Bowker's Potash Fertilizer	3311 6232 Cottage Grove	Found		4.6	12.2	1.0	
*Bowker's Potash Fertilizer	3311 6247 Marengo	Found		4.8	9.2	2.7	
Bowker's Potash Fertilizer	3311 6506 Connersville	Found		4.6	10.7	2.6	
Bowker's Potash Fertilizer	3311 6760 Chrisney	Found		5.0	11.0	1.7	
Bowker Fertilizer Co., Cincinnati, Ohio.—							
Dissolved Bone with Potash	3459	Guaranteed		2.0	10.0	1.0	
*Dissolved Bone with Potash	3459 6077 Campbellsburg	Found		2.2	10.1	2.9	
*Dissolved Bone with Potash	3459 6114 Morris	Found		2.4	10.1	4.3	
Dissolved Bone with Potash	3459 6506 Connersville	Found		2.0	10.7	2.3	
Bowker's 10 per cent Manure	3460	Guaranteed	0.7	10.0	5.0	1.0	
*Bowker's 10 per cent Manure	3460 3084 Shelbyville	Found	0.9	10.9	5.5	2.3	
*Bowker's 10 per cent Manure	3460 6161 Dale	Found	0.9	10.9	5.6	2.3	
Bowker's 10 per cent Manure	3460 6711 Dale	Found	1.0	10.4	5.9	1.8	
Bowker's Tobacco Grower	3730	Guaranteed	1.6	5.0	8.0	2.0	
*Bowker's Tobacco Grower	3730 6120 Mariab Hill	Found	1.9	5.4	8.9	2.6	
*Bowker's Tobacco Grower	3730 6226 Richmond	Found	1.8	6.0	8.9	2.2	
Bowker Fertilizer Co., Elizabeth, N. J.—							
"Bone Meal"	3814	Guaranteed	1.2				25.0
"Bone Meal"	3814 6710 Dale	Found	1.3				25.5
Bowker's High Grade Fertilizer	3962	Guaranteed	2.4	6.0	8.0	1.0	
*Bowker's High Grade Fertilizer	3962 6297 Shoals	Found	2.7	6.8	9.0	2.7	
Bowker's High Grade Fertilizer	3962 6747 Rockport	Found	2.6	6.5	8.8	2.1	
Bowker's Spring Special	3991	Guaranteed	0.8	2.0	8.0	1.0	
*Bowker's Spring Special	3991 6121 Mariab Hill	Found	1.0	2.5	8.9	1.9	
Buhner Ferdinand F., Seymour, Ind.—							
Buhner's All Crop Grower	3316	Guaranteed	2.0	1.2	8.0	2.0	
Buhner's All Crop Grower	3316 6883 Seymour	Found	2.2	1.2	8.1	6.0	
Ammoniated Ground Bone	3327	Guaranteed	2.0				17.0
*Ammoniated Ground Bone	3327 6226 Seymour	Found	4.7				12.9
Grain Producer	4123	Guaranteed	0.4	2.0	7.0	2.0	
*Grain Producer	4123 6312 Seymour	Found	0.9	2.5	6.7	2.8	
Raw Ground Bone	4171	Guaranteed	2.2				20.0
Raw Ground Bone	4171 6882 Seymour	Found	4.2				21.3
Champion Fertilizer Co., Cincinnati, Ohio.—							
Western Reserve Dissolved Bone	3159	Guaranteed	0.8	2.0	10.0	1.0	
Western Reserve Dissolved Bone	3159 6484 Nulltown	Found	1.0	1.9	10.1	2.4	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Chicago Fertilizer Co., The, Chicago, Ill.—									
Bone, Blood and Potash.....	3011			Guaranteed	1.3	3.0	8.0	3.0	---
*Bone, Blood and Potash.....	3011	6083	Campbellsburg	Found	1.6	2.6	8.1	1.4	---
Wheat and Corn Special.....	3316			Guaranteed	0.8	1.0	7.0	1.0	---
*Wheat and Corn Special.....	3316	6237	Liberty	Found	0.9	1.2	6.7	1.5	---
Western Bone Black and Potash.....	3412			Guaranteed	0.4	3.5	8.0	1.0	---
*Western Bone Black and Potash.....	3412	6061	Campbellsburg	Found	0.7	3.1	8.6	1.6	---
Chicago Fertilizer Co., The, Columbus, Ohio.—									
Diamond Phosphate and Potash.....	3361			Guaranteed	---	5.0	10.0	---	---
*Diamond Phosphate and Potash.....	3361	6083	Campbellsburg	Found	---	4.7	11.3	1.6	---
No. 1 Potash Special.....	3363			Guaranteed	0.8	4.0	8.0	---	---
*No. 1 Potash Special.....	3363	6080	Campbellsburg	Found	0.8	3.7	9.0	1.7	---
Cincinnati Phosphate Co., The, Cincinnati, Ohio.—									
Bone and Phosphate Mixture, Wheat Special.....	3700			Guaranteed	1.6	1.0	10.0	6.0	---
*Bone and Phosphate Mixture, Wheat Special.....	3700	6212	Corydon	Found	1.4	2.0	8.9	7.1	---
Bone and Phosphate Mixture, Wheat Special.....	3700	6301	Corydon	Found	1.7	1.1	10.4	7.6	---
A Wheat Grower.....	4075			Guaranteed	---	---	12.0	1.0	---
A Wheat Grower.....	4075	6303	Winchester	Found	---	---	11.3	8.3	---
Cincinnati Phosphate Co., The, St. Bernard, Ohio.—									
Capitol Tobacco Food.....	3324			Guaranteed	0.8	4.0	8.0	1.0	---
*Capitol Tobacco Food.....	3324	6211	Corydon	Found	1.0	4.0	8.0	1.9	---
Capitol Tobacco Food.....	3324	6300	Corydon	Found	1.0	3.7	8.5	2.4	---
Capitol High Grade Guano.....	3304			Guaranteed	1.2	2.5	8.0	1.0	---
*Capitol High Grade Guano.....	3304	6023	Ridgeville	Found	1.4	3.4	8.4	2.0	---
Capitol High Grade Guano.....	3304	6213	Corydon	Found	1.3	2.5	8.9	1.8	---
*Capitol High Grade Guano.....	3304	6707	Jasper	Found	1.3	2.5	9.4	2.1	---
Capitol High Grade Guano.....	3304	6301	Ridgeville	Found	1.4	2.7	9.5	2.4	---
Capitol Grain and Grass Grower.....	3305			Guaranteed	1.0	2.0	8.0	1.0	---
*Capitol Grain and Grass Grower.....	3305	6021	Ridgeville	Found	1.1	2.3	8.2	3.0	---
Capitol Grain and Grass Grower.....	3305	6314	Corydon	Found	1.3	2.1	8.5	1.7	---
Capitol Grain and Grass Grower.....	3305	6303	Corydon	Found	1.3	1.8	8.2	1.8	---
Capitol Grain and Grass Grower.....	3305	6300	Ridgeville	Found	1.2	2.6	9.0	2.3	---
Capitol Dissolved Bone and Potash.....	3306			Guaranteed	---	4.0	10.0	1.0	---
*Capitol Dissolved Bone and Potash.....	3306	6169	Brookville	Found	---	4.3	9.8	2.0	---
Capitol Dissolved Bone and Potash.....	3306	6439	Argos	Found	---	4.7	10.8	1.1	---
Cereals.....	3334			Guaranteed	0.8	1.0	7.0	1.0	---
*Cereals.....	3334	6440	Argos	Found	0.8	1.3	7.8	1.7	---
Continental Fertilizer Co., Louisville, Ky.—									
Bear Indiana Slaughter House Bone.....	3760			Guaranteed	1.6	2.0	8.0	1.0	---
*Bear Indiana Slaughter House Bone.....	3760	6336	Vevay	Found	1.6	1.7	8.7	3.1	---
Bear Indiana Slaughter House Bone.....	3760	6756	Cross Plains	Found	1.7	2.5	8.8	2.3	---
Bear Grain Grower.....	4039			Guaranteed	0.4	4.0	8.0	1.0	---
*Bear Grain Grower.....	4039	6336	Vevay	Found	0.5	4.4	8.4	2.7	---
Bear Grain Grower.....	4039	6318	Evansville	Found	0.5	4.0	9.6	1.6	---
Bear Potash Special.....	4161			Guaranteed	0.8	7.0	7.0	0.5	---
Bear Potash Special.....	4161	6648	Madison	Found	0.7	6.8	6.8	1.6	---

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble, and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.						
Continental Fertilizer Co., Nash- ville, Tenn.—								
Bear Special Wheat Grower.....	3328		Guaranteed	0.8	1.0	7.0	1.0	----
Bear Special Wheat Grower.....	3328 6649	Greensburg	Found	1.0	1.2	7.4	4.7	----
Bear Special Wheat Grower.....	3328 6817	Evansville	Found	1.0	1.1	6.3	5.0	----
Bear Indiana Special Corn Grower	3426		Guaranteed	0.8	1.0	7.0	1.0	----
*Bear Indiana Special Corn Grower	3426 6363	Vevay	Found	0.9	1.1	8.1	2.9	----
Corya J. W., North Vernon, Ind.—								
Jennings Co. Acidulated Bone Meal	3870		Guaranteed	1.6	-----	6.0	7.0	----
*Jennings Co. Acidulated Bone Meal	3870 6400	Hayden	Found	1.8	-----	6.0	9.9	----
Jennings Co. Grain Grower.....	3872		Guaranteed	0.8	2.0	8.0	1.0	----
*Jennings Co. Grain Grower.....	3872 6401	Hayden	Found	0.9	1.8	8.1	2.0	----
Potato and Tobacco Grower.....	4103		Guaranteed	1.6	4.0	7.0	1.0	----
*Potato and Tobacco Grower.....	4103 6366	Vevay	Found	1.6	4.0	6.4	2.9	----
Darling & Company, Chicago, Ill.—								
Darling's Ground Raw Bone.....	2843		Guaranteed	3.3	-----	-----	-----	21.0
Darling's Ground Raw Bone.....	2843 6637	English	Found	3.3	-----	-----	-----	24.0
Darling's Western Brand.....	2846		Guaranteed	0.4	0.5	7.0	-----	-----
*Darling's Western Brand.....	2846 6464	Valparaiso	Found	0.4	0.8	6.2	0.9	-----
Darling's Chicago Brand.....	2847		Guaranteed	1.6	2.0	8.0	-----	-----
*Darling's Chicago Brand.....	2847 6199	Liberty	Found	1.6	2.0	8.2	3.6	-----
*Darling's Chicago Brand.....	2847 6248	Birdseye	Found	1.6	2.3	7.6	4.1	-----
Darling's Chicago Brand.....	2847 6511	Cottage Grove	Found	1.7	2.0	8.2	3.7	-----
Darling's Chicago Brand.....	2847 6636	English	Found	1.5	2.1	8.4	4.2	-----
Darling's Vegetable and Lawn Fer- tilizer.....	2848		Guaranteed	3.3	7.0	8.0	-----	-----
*Darling's Vegetable and Lawn Fer- tilizer.....	2848 6005	Milford	Found	3.5	7.5	9.1	0.9	-----
Darling's Farmer's Favorite Brand	2849		Guaranteed	2.4	4.0	8.0	-----	-----
*Darling's Farmer's Favorite Brand	2849 6200	Liberty	Found	2.3	4.3	10.6	2.2	-----
Darling's Farmer's Favorite Brand	2849 6512	Cottage Grove	Found	2.3	3.5	10.0	3.9	-----
Darling's High Grade Acid Phos- phate.....	3244		Guaranteed	-----	-----	14.0	-----	-----
Darling's High Grade Acid Phos- phate.....	3244 6513	Cottage Grove	Found	-----	-----	13.6	1.8	-----
Sure Winner Brand.....	3280		Guaranteed	0.8	3.0	8.0	-----	-----
*Sure Winner Brand.....	3280 6006	Milford	Found	0.9	3.0	7.6	2.0	-----
*Sure Winner Brand.....	3280 6465	Valparaiso	Found	0.8	2.8	7.6	2.0	-----
Sure Winner Brand.....	3280 6514	Cottage Grove	Found	0.9	3.2	8.0	2.0	-----
Sure Winner Brand.....	3280 6638	English	Found	0.9	3.0	8.3	2.3	-----
Pure Ground Bone.....	3281		Guaranteed	2.4	-----	-----	-----	23.0
Pure Ground Bone.....	3281 6738	Tell City	Found	2.3	-----	-----	-----	29.0
Darling's General Crop Brand.....	3859		Guaranteed	0.8	6.0	8.0	-----	-----
*Darling's General Crop Brand.....	3859 6008	Milford	Found	0.9	5.9	8.4	1.7	-----
*Darling's General Crop Brand.....	3859 6201	Liberty	Found	0.8	5.8	8.1	1.5	-----
Darling's General Crop Brand.....	3859 6515	Cottage Grove	Found	0.8	5.5	8.0	2.7	-----
Darling's General Crop Brand.....	3859 6737	Tell City	Found	0.9	6.1	8.4	2.7	-----
Pure Bone and Potash.....	4044		Guaranteed	3.1	6.0	-----	-----	20.1
Pure Bone and Potash.....	4044 6700	Milan	Found	1.9	5.5	-----	-----	24.9
D. & K. Fertilizer Co., Indianapolis, Ind.—								
Dissolved Bone with Potash.....	3362		Guaranteed	0.8	1.1	7.0	1.0	----
Dissolved Bone with Potash.....	3362 6543	Greensburg	Found	1.0	1.0	7.2	2.6	----
D. & K. Wheat Grower.....	3753		Guaranteed	1.0	1.5	8.0	1.2	----
D. & K. Wheat Grower.....	3753 6842	Nabbs	Found	1.2	2.2	7.7	2.5	----

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.						
D. & K. Fertilizer Co., Indianapolis, Ind.—								
German Kainit	3997		Guaranteed	12.0				
*German Kainit	3997 6035	Greensburg	Found	13.3				
D. & K. Phosphate and Potash	4210		Guaranteed	8.0	10.0			
D. & K. Phosphate and Potash	4210 6544	Greensburg	Found	0.8	1.8	7.6	2.3	
Dryfus Packing & Provision Co., LaFayette, Ind.—								
Star Brand	2922		Guaranteed	4.5				16.0
*Star Brand	2922 6397	Lafayette	Found	4.9				20.4
Empire Carbon Works, National Stock Yards, Ill.—								
Empire Complete Manure	4118		Guaranteed	0.8	1.0	7.0	1.5	
Empire Complete Manure	4118 6677	Huntingburg	Found	1.0	1.8	8.1	2.2	
Ewing, Geo. M., Greensburg, Ind.—								
Ewing's Best Phosphate and Potash	3325		Guaranteed	2.0	12.0			
Ewing's Best Phosphate and Potash	3325 6808	Greensburg	Found	1.9	12.3		0.5	
Farmers' Fertilizer Co., Indianapolis, Ind.—								
Farmers Wheat and Oats Special	3199		Guaranteed	14.0				
*Farmers Wheat and Oats Special	3199 6185	Laurel	Found	12.9	2.7			
*Farmers Wheat and Oats Special	3199 6397	Eckerty	Found	11.7	2.7			
Farmers Half and Half	3204		Guaranteed	8.0	8.5	6.0		
Farmers Half and Half	3204 6680	Lawrenceville	Found	2.1	8.3	6.9		
Farmers Half and Half	3204 6778	Tennysen	Found	1.6	10.4	7.5		
Farmers Harvest King	3398		Guaranteed	1.1	5.0	8.5	2.5	
*Farmers Harvest King	3398 6802	Tennysen	Found	1.2	6.1	8.8	4.6	
*Farmers Harvest King	3398 6808	Shoals	Found	1.1	4.8	10.1	3.5	
Farmers Harvest King	3398 6777	Tennysen	Found	0.8	5.5	11.5	1.7	
Our Universal Phosphate	3555		Guaranteed	0.8	1.0	7.0	1.0	
*Our Universal Phosphate	3555 6051	Campbellsburg	Found	0.7	2.6	8.5	2.4	
*Our Universal Phosphate	3555 6886	Eckerty	Found	0.7	1.0	8.9	2.5	
Our Universal Phosphate	3555 6681	Lawrenceville	Found	0.6	0.9	7.4	2.4	
Our Universal Phosphate	3555 6767	Chrisney	Found	0.6	1.0	7.5	2.6	
Corn and Wheat Grower	3556		Guaranteed	0.8	2.0	8.0	1.0	
*Corn and Wheat Grower	3556 6899	Greenfield	Found	0.8	2.0	8.9	2.3	
*Corn and Wheat Grower	3556 6815	Charlottesville	Found	0.8	2.3	9.3	2.4	
Our German Phosphate	3557		Guaranteed	0.8	2.0	8.0	1.0	
*Our German Phosphate	3557 6053	Campbellsburg	Found	0.8	3.6	9.4	2.1	
*Our German Phosphate	3557 6800	Greenfield	Found	0.8	2.1	9.3	1.8	
*Our German Phosphate	3557 6899	Eckerty	Found	0.8	2.5	9.3	2.1	
Pure Bone	3806		Guaranteed	1.6				22.0
Pure Bone	3806 6766	Chrisney	Found	1.9				22.0
High Grade Potash Manure	3807		Guaranteed	0.4	8.0	8.0	1.0	
*High Grade Potash Manure	3807 6801	Greenfield	Found	0.7	9.4	9.1	1.2	
*High Grade Potash Manure	3807 6802	Charlottesville	Found	0.5	10.0	9.1	1.2	
*High Grade Potash Manure	3807 6808	Shoals	Found	0.5	10.9	8.1	1.2	
Farmers Phosphate Company, Indianapolis, Ind.—								
Rock Phosphate (Fossil Bone)	3830		Guaranteed					26.7
*Rock Phosphate (Fossil Bone)	3830 6893	Monon	Found					26.9

5—See page 521.

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble In Wat. r. Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insolubl. Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Federal Chemical Company, Louisville, Ky.—									
Daybreak Potash Mixture.....	3917			Guaranteed	4.0	10.0			
*Daybreak Potash Mixture.....	3917 6349	Marengo		Found	3.6	8.8	0.8		
*Daybreak Potash Mixture.....	3917 6370	Eckerty		Found	3.7	9.8	0.8		
Daybreak Potash Mixture.....	3917 6591	Corydon		Found	3.8	9.7	0.4		
Daybreak Bone and Potash.....	3923			Guaranteed	2.0	10.0			
*Daybreak Bone and Potash.....	3923 6128	Borden		Found	1.9	10.1	1.0		
Daybreak Bone and Potash.....	3923 6008	Depauw		Found	1.7	10.2	1.1		
Daybreak Standard Phosphate.....	3923			Guaranteed		12.0			
*Daybreak Standard Phosphate.....	3923 6350	Marengo		Found		11.1	1.5		
Daybreak Standard Phosphate.....	3923 6901	Evansville		Found		11.7	2.0		
Daybreak Star Phosphate.....	3924			Guaranteed		10.0			
Daybreak Star Phosphate.....	3924 6589	Corydon		Found		11.3	1.0		
Daybreak Royal Phosphate.....	3925			Guaranteed		14.0			
*Daybreak Royal Phosphate.....	3925 6351	Marengo		Found		13.8	1.1		
*Daybreak Royal Phosphate.....	3925 6371	Eckerty		Found		15.3	1.3		
Daybreak Royal Phosphate.....	3925 6595	Marengo		Found		14.5	1.3		
Daybreak Crop Grower.....	3926			Guaranteed	0.8	2.0	10.0	3.0	
*Daybreak Crop Grower.....	3926 6029	Greensburg		Found	1.1	1.8	9.6	0.5	
*Daybreak Crop Grower.....	3926 6265	Cannelton		Found	0.9	2.0	10.7	0.6	
Daybreak Grain Grower.....	3927			Guaranteed	0.4	1.5	9.0	3.0	
*Daybreak Grain Grower.....	3927 6030	Greensburg		Found	0.6	1.3	9.5	0.7	
Daybreak Favorite.....	3929			Guaranteed	0.8	3.0	11.0	3.0	
*Daybreak Favorite.....	3929 6031	Greensburg		Found	0.9	3.3	10.6	0.7	
*Daybreak Wheat and Corn Special	3930			Guaranteed	0.4	1.0	11.0	3.0	
*Daybreak Wheat and Corn Special	3930 6369	Cannelton		Found	0.6	0.8	10.3	0.7	
Daybreak Standard Tobacco Grower	3995			Guaranteed	0.8	4.0	8.0	3.0	
*Daybreak Standard Tobacco Grower	3995 6215	Corydon		Found	0.9	3.2	8.8	0.5	
*Daybreak Standard Tobacco Grower	3995 6367	Cannelton		Found	0.8	2.6	9.9	0.3	
Daybreak Standard Corn and Wheat Grower	4063			Guaranteed	1.6	2.0	8.0	2.0	
*Daybreak Standard Corn and Wheat Grower	4063 6304	Loogootee		Found	1.7	2.3	7.5	1.3	
Daybreak Standard Corn and Wheat Grower	4063 6550	Greensburg		Found	1.4	2.1	8.8	0.8	
Daybreak Vegetable Grower.....	4101			Guaranteed	1.5	5.0	8.0	2.0	
*Daybreak Vegetable Grower.....	4101 6127	Borden		Found	1.7	4.6	8.4	1.1	
*Daybreak Vegetable Grower.....	4104 6082	St. Paul		Found	1.7	5.2	8.6	1.1	
Daybreak Corn and Clover Grower	4114			Guaranteed	0.8	1.0	9.0	1.0	
*Daybreak Corn and Clover Grower	4114 6316	Corydon		Found	1.0	1.0	9.1	0.5	
Daybreak Corn and Clover Grower	4114 6509	Depauw		Found	1.2	0.7	9.6	0.5	
Daybreak Special Fruit Grower.....	4117			Guaranteed	1.2	6.0	8.0		
*Daybreak Special Fruit Grower.....	4117 6128	Borden		Found	1.4	5.2	9.0	1.5	
"A" Daybreak Wheat and Corn Special	4143			Guaranteed	0.4	1.0	11.0		
*"A" Daybreak Wheat and Corn Special	4143 6129	Borden		Found	0.6	1.2	11.0	1.0	
*"A" Daybreak Wheat and Corn Special	4143 6083	St. Paul		Found	0.4	0.8	11.0	0.9	
*"A" Daybreak Wheat and Corn Special	4143 6372	Eckerty		Found	0.8	0.7	12.2	1.2	
"A" Daybreak Wheat and Corn Special	4143 6594	Corydon		Found	0.6	1.0	12.8	1.0	
"A" Daybreak Wheat and Corn Special	4143 6738	Bellevue		Found	0.7	1.4	11.7	0.5	
"A" Daybreak Favorite.....	4144			Guaranteed	0.8	3.0	11.0		
"A" Daybreak Favorite.....	4144 6799	Madison		Found	0.8	3.1	10.2	0.6	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Federal Chemical Company, Louisville, Ky.—									
"A" Daybreak Favorite	4144	6800	Evansville	Found	1.0	4.4	10.8	0.9	
"A" Daybreak Crop Grower	4145			Guaranteed	0.8	3.0	10.0		
"A" Daybreak Crop Grower	4145	6797	Bellevue	Found	0.8	3.1	11.8	0.4	
"A" Daybreak Grain Grower	4146			Guaranteed	0.4	1.5	9.0		
"A" Daybreak Grain Grower	4146	6305	Loogootee	Found	0.4	1.3	9.9	0.7	
"A" Daybreak Special Tobacco Grower	4147			Guaranteed	1.3	6.0	8.0		
"A" Daybreak Special Tobacco Grower	4147	6651	Greensburg	Found	1.3	6.1	8.7	0.8	
"A" Daybreak Standard Tobacco Grower	4148			Guaranteed	0.8	4.0	8.0		
"A" Daybreak Standard Tobacco Grower	4148	6861	Corydon	Found	0.9	4.1	7.8	0.9	
Fox Chemical Co., Louisville, Ky.—									
Fox Wheat and Corn Grower	3729			Guaranteed	1.6	3.0	10.0		
*Fox Wheat and Corn Grower	3729	6176	Brookville	Found	1.7	1.9	10.1	1.3	
Fox Alkaline Bone	3731			Guaranteed		2.0	10.0		
*Fox Alkaline Bone	3731	6817	Corydon	Found		2.0	8.4	0.8	
Fox Acid Phosphate	3733			Guaranteed			14.0		
Fox Acid Phosphate	3733	6874	Salem	Found			14.0	1.3	
Fox Grain Special	3111			Guaranteed	0.4	1.5	9.0	1.0	
Fox Grain Special	3111	6597	Corydon	Found	0.6	1.3	8.6	0.9	
Fox Bone, Blood and Potash	3573			Guaranteed	0.3	1.0	11.0	2.0	
*Fox Bone, Blood and Potash	3573	6177	Brookville	Found	0.5	1.0	10.7	0.9	
Fox Vegetable Grower	3551			Guaranteed	1.6	5.0	8.0		
*Fox Vegetable Grower	3551	6349	Sellersburg	Found	1.4	3.7	9.3	2.1	
Fox Vegetable Grower	3551	6549	Madison	Found	1.5	5.1	8.7	0.7	
"A" Fox Formula	3575			Guaranteed	0.8	3.0	11.0		
"A" Fox Formula	3575	6228	Milton	Found	1.0	3.2	11.3	0.3	
"A" Fox Formula	3575	6546	Vevay	Found	0.9	3.3	11.3	1.0	
"A" Fox Formula	3575	6850	Montgomery	Found	0.8	3.1	11.7	1.3	
Fox Bone Phosphate and Potash	3596			Guaranteed		4.0	10.0		
*Fox Bone Phosphate and Potash	3596	6318	Corydon	Found		4.1	9.6	0.6	
Fox Bone Phosphate and Potash	3596	6779	Tennysen	Found		3.6	10.5	0.4	
Bone, Blood and Potash	3812			Guaranteed	0.4	1.0	11.0	2.0	
Bone, Blood and Potash	3812	6524	Greensburg	Found	0.5	0.9	10.6	1.1	
Bone, Blood and Potash	3812	6781	Tennysen	Found	0.5	1.0	12.0	0.3	
Fox Tobacco Grower	4002			Guaranteed	1.6	2.0	8.0	2.0	
*Fox Tobacco Grower	4002	6305	Tennysen	Found	2.2	2.1	6.7	1.3	
Fox Special Tobacco Grower	4003			Guaranteed	1.6	5.0	8.0		
*Fox Special Tobacco Grower	4003	6306	Tennysen	Found	1.9	5.2	8.0	1.3	
Fox Early Harvest	4058			Guaranteed	0.8	2.0	10.0	1.0	
*Fox Early Harvest	4058	6178	Brookville	Found	0.9	2.0	10.4	0.7	
Fox Early Harvest	4058	6704	Dillsboro	Found	0.8	2.3	8.7	0.8	
Fox Crop Grower	4060			Guaranteed	0.8	4.0	8.0	1.0	
*Fox Crop Grower	4060	6179	Brookville	Found	0.9	3.0	9.2	2.6	
Fox Crop Grower	4060	6617	Morris	Found	0.7	4.7	8.7	1.1	
Fox Crop Grower	4060	6780	Tennysen	Found	1.1	4.2	8.4	0.5	
Fox Ground Raw Bone	4089			Guaranteed	2.4				24.0
Fox Ground Raw Bone	4089	6851	Montgomery	Found	2.3				28.7
Fox Wheat and Corn Manure	4132			Guaranteed	1.6	3.0	8.0		
*Fox Wheat and Corn Manure	4132	6313	Scottsburg	Found	1.6	3.4	11.1	1.4	
Fox Wheat and Corn Manure	4132	6706	Dillsboro	Found	1.2	1.6	8.0	1.9	
Globe Fertilizer Co., Louisville, Ky.—									
Globe Acid Phosphate	3720			Guaranteed			14.0		
Globe Acid Phosphate	3720	6806	Jasper	Found			15.1	1.0	
Big Four Phosphate	3721			Guaranteed		1.0	8.0		

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble In Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Globe Fertilizer Co., Louisville, Ky.—									
Big Four Phosphate	3721	6598	Corydon	Found		0.6	12.1	0.7	
Globe Bone Dust	3723			Guaranteed	0.8	1.0	9.0		
*Globe Bone Dust	3723	6599	Troy	Found	0.9	1.3	9.4	5.3	
*Globe Bone Dust	3723	6270	Jasper	Found	0.9	1.1	9.9	0.7	
Globe Bone Dust	3723	6736	Troy	Found	1.0	1.6	9.4	1.5	
Globe Wheat Grower	3725			Guaranteed	1.6	2.0	10.0		
Globe Wheat Grower	3726	6507	Connersville	Found	1.3	1.6	12.3	1.2	
Eagle Corn and Wheat Grower	3727			Guaranteed	1.6	2.0	8.0		
*Eagle Corn and Wheat Grower	3727	5998	Linton	Found	1.9	2.3	8.3	1.2	
*Eagle Corn and Wheat Grower	3727	6219	Corydon	Found	1.8	2.2	8.0	2.3	
Eagle Corn and Wheat Grower	3727	6509	Connersville	Found	1.8	1.6	9.1	1.5	
Eagle Corn and Wheat Grower	3727	6599	Corydon	Found	1.3	2.0	9.4	0.7	
Globe Grain Grower	3109			Guaranteed	0.4	1.5	9.0	1.0	
*Globe Grain Grower	3109	6130	Borden	Found	0.5	1.5	9.3	0.6	
Standard Acid Phosphate	3573			Guaranteed			12.0	2.0	
*Standard Acid Phosphate	3573	6263	English	Found			11.9	0.9	
Big 4 Tobacco Grower	3589			Guaranteed	1.6	2.0	8.0	1.0	
*Big 4 Tobacco Grower	3589	6307	Lincoln City	Found	1.9	1.5	8.8	1.5	
Globe Progress Corn and Wheat Grower	3670			Guaranteed	0.8	2.0	10.0		
*Globe Progress Corn and Wheat Grower	3670	6181	Borden	Found	0.9	1.6	10.0	0.7	
*Globe Progress Corn and Wheat Grower	3670	6271	Milton	Found	0.9	2.0	10.1	0.7	
Globe Progress Corn and Wheat Grower	3670	6577	Georgetown	Found	0.8	1.7	10.0	0.7	
"A" Braden Formula	3674			Guaranteed	0.8	3.0	11.0		
*"A" Braden Formula	3674	6068	Greensburg	Found	1.0	2.5	11.4	0.5	
"A" Braden Formula	3674	6508	Connersville	Found	0.9	2.8	11.2	1.3	
Potash Special	3678			Guaranteed	2.0	10.0			
*Potash Special	3678	6063	Greensburg	Found	1.6	10.1	0.7		
Globe Bone Phosphate and Potash	3679			Guaranteed	4.0	10.0			
*Globe Bone Phosphate and Potash	3679	6064	Greensburg	Found	3.9	9.3	0.7		
*Globe Bone Phosphate and Potash	3679	6308	Lincoln City	Found	3.1	10.1	0.5		
*Globe Bone Phosphate and Potash	3679	6263	English	Found	3.6	9.7	0.6		
Big Four Tobacco Grower	3681			Guaranteed	1.6	2.0	8.0		
*Big Four Tobacco Grower	3681	6189	Boonville	Found	1.6	2.4	8.7	1.1	
Globe Soluble Vegetable Manure	3682			Guaranteed	1.6	5.0	8.0		
*Globe Soluble Vegetable Manure	3682	5990	Linton	Found	2.0	4.4	8.1	1.4	
*Globe Soluble Vegetable Manure	3682	6273	Jasper	Found	1.9	4.5	8.2	1.5	
Bone and Potash	3310			Guaranteed	0.4	1.0	11.0	3.0	
*Bone and Potash	3310	6000	Linton	Found	0.5	1.0	10.8	0.9	
*Bone and Potash	3310	6180	Brookville	Found	0.5	0.9	11.9	0.8	
*Bone and Potash	3310	6194	Georgetown	Found	0.5	1.0	11.0	7.5	
Bone and Potash	3310	6510	Lyons	Found	0.5	1.0	12.3	1.0	
Bone and Potash	3310	6598	Corydon	Found	0.7	0.9	12.2	1.0	
Kentucky Standard Tobacco Grower	3811			Guaranteed	1.6	5.0	8.0	2.0	
*Kentucky Standard Tobacco Grower	3811	6190	Boonville	Found	1.3	3.9	10.1	0.9	
Globe Universal Crop Grower	3944			Guaranteed	0.8	4.0	8.0	3.0	
*Globe Universal Crop Grower	3944	6181	Brookville	Found	1.1	3.7	8.1	0.9	
*Globe Universal Crop Grower	3944	6191	Boonville	Found	0.9	3.4	10.2	0.4	
*Globe Universal Crop Grower	3944	6195	Georgetown	Found	1.9	4.3	7.9	6.9	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Globe Fertilizer Co., Louisville, Ky.—									
Globe Vegetable Grower.....	4004		Guaranteed	0.8	8.0	8.0	2.0		
*Globe Vegetable Grower.....	4004 6065	Greensburg	Found	0.9	7.2	8.7	0.3		
Globe Vegetable Grower.....	4004 6610	Depauw	Found	1.0	6.9	9.7	0.5		
Globe Vegetable Manure.....	4065		Guaranteed	0.4	8.0	8.0	2.0		
*Globe Vegetable Manure.....	4065 6320	Corydon	Found	0.5	7.9	7.4	0.5		
Globe Potash Mixture.....	4138		Guaranteed		10.0	8.0			
*Globe Potash Mixture.....	4138 6449	Kewanna	Found		8.9	6.8	1.5		
"A" Globe Universal Crop Grower	4165		Guaranteed	0.8	4.0	8.0			
*"A" Globe Universal Crop Grower	4165 6189	Brookville	Found	1.1	3.9	8.4	0.7		
*"A" Globe Universal Crop Grower	4165 6321	Corydon	Found	1.1	3.9	8.0	0.2		
"A" Globe Universal Crop Grower	4165 6576	Georgetown	Found	1.0	5.1	7.3	0.7		
Hardy Packing Co., The, Chicago, Ill.—									
Hardy's Tobacco and Potato Special	3219		Guaranteed	1.6	4.0	8.0	1.0		
Hardy's Tobacco and Potato Special	3219 6855	Henryville	Found	1.8	4.9	8.0	1.7		
Hardy's Tankage Bone and Potash	3220		Guaranteed	1.2	2.0	8.0	1.0		
*Hardy's Tankage Bone and Potash	3220 6339	Henryville	Found	1.3	2.3	9.3	1.2		
Hardy's Tankage Bone and Potash	3220 6869	Scottsburg	Found	1.0	1.8	8.1	2.5		
Hardy's Corn and Wheat Grower	3221		Guaranteed	0.4	2.5	8.0	1.0		
*Hardy's Corn and Wheat Grower	3221 6373	Dublin	Found	0.5	3.1	7.3	1.0		
*Hardy's Corn and Wheat Grower	3221 6340	Henryville	Found	0.7	2.4	8.6	2.0		
Hardy's Corn and Wheat Grower	3221 6640	Horace	Found	0.4	2.5	9.1	1.6		
Hardy's Corn and Wheat Grower	3221 6835	Freetown	Found	0.4	3.0	8.5	1.7		
Hardy's No. 1 Crop Producer.....	3223		Guaranteed	0.8	1.0	7.0	1.0		
Hardy's No. 1 Crop Producer.....	3222 6686	Freetown	Found	0.8	2.9	9.8	1.3		
Hardy Packing Co., The, Columbus, Ohio.—									
Hardy's Potato Grower.....	3964		Guaranteed	1.2	10.0	8.0			
*Hardy's Potato Grower.....	3964 6341	Henryville	Found	1.4	8.4	9.3	0.7		
Hardy's Imperial.....	3965		Guaranteed	0.8	7.0	8.0			
Hardy's Imperial.....	3965 6364	Henryville	Found	0.6	7.4	9.1	1.1		
Hardy's Acme Phosphate.....	3967		Guaranteed		5.0	10.0			
*Hardy's Acme Phosphate.....	3967 6342	Henryville	Found		6.3	10.0	1.4		
Hess & Bro., S. M. Philadelphia, Pa.—									
Keystone Bone Phosphate.....	2901		Guaranteed	0.8	1.0	8.0	2.0		
*Keystone Bone Phosphate.....	2901 6495	Liberty	Found	1.0	0.8	9.2	3.6		
Keystone Bone Phosphate.....	2901 6088	Birdseye	Found	1.0	1.0	8.5	3.7		
Special Compound.....	2902		Guaranteed	0.8	4.0	8.0	1.0		
*Special Compound.....	2902 6374	Dublin	Found	1.0	4.4	8.3	2.1		
Special Compound.....	2902 6385	Birdseye	Found	1.1	4.4	8.6	2.4		
Special Compound.....	2902 6363	Henryville	Found	1.0	4.8	8.9	2.8		
Wheat and Grass Manure.....	2903		Guaranteed	0.8	2.0	8.0	1.0		
Wheat and Grass Manure.....	2903 6353	Henryville	Found	1.0	1.7	8.5	3.1		
Soluble Bone Phosphate.....	2904		Guaranteed			14.0	2.0		
Soluble Bone Phosphate.....	2904 6496	Liberty	Found			16.5	0.8		
Soluble Bone Phosphate.....	2904 6386	Birdseye	Found			15.7	1.0		
Potato and Truck Manure.....	3279		Guaranteed	2.5	6.0	8.0	1.0		
*Potato and Truck Manure.....	3279 5999	Terre Haute	Found	2.7	6.6	9.6	2.4		
Potato and Truck Manure.....	3279 6087	Birdseye	Found	2.6	6.7	8.5	2.1		
Soluble Bone and Potash.....	3301		Guaranteed		2.0	10.0	1.0		
Soluble Bone and Potash.....	3301 6497	Liberty	Found		2.0	10.5	4.3		
Hess' Ground Bone.....	3384		Guaranteed	2.4					
Hess' Ground Bone.....	3384 6089	Birdseye	Found	2.8					20.0

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number	Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official Inspection B.							
Hilgemeier & Bro., Frank, Indianapolis, Ind.—								
Hilgemeier's Special Ground Bone	3942		Guaranteed	3.0				23.0
*Hilgemeier's Special Ground Bone	3942 6350	Indianapolis	Found	2.4				26.4
Hirsh, Stein & Co., Chicago, Ill.—								
Calumet Brand Special Pure Bone Meal	4180		Guaranteed	0.8				29.7
Calumet Brand Special Pure Bone Meal	4180 6718	Dale	Found	1.2				30.1
Calumet Brand Special Pure Bone Meal	4180 6721	Jasper	Found	0.8				31.6
Calumet Brand Pure Bone Meal	4181		Guaranteed	2.4				22.8
*Calumet Brand Pure Bone Meal	4181 6466	Hammond	Found	4.2				16.7
Calumet Brand Pure Bone Meal	4181 6720	Jasper	Found	2.7				24.2
Calumet Brand Pure Bone Meal	4181 6771	North Vernon	Found	2.4				24.7
Calumet Brand Pure Bone Meal	4181 6843	Lexington	Found	2.8				22.8
Calumet Brand Pure Raw Bone Meal	4201		Guaranteed	3.7				20.0
Calumet Brand Pure Raw Bone Meal	4201 6627	English	Found	4.2				20.5
Calumet Brand Pure Raw Bone Meal	4201 6646	Birdseye	Found	4.5				21.0
Calumet Brand Pure Raw Bone Meal	4201 6773	North Vernon	Found	3.8				19.3
Calumet Brand Special Pure Bone Meal and Potash	4202		Guaranteed	0.8	4.0			20.0
Calumet Brand Special Pure Bone Meal and Potash	4202 6637	Milroy	Found	0.9	4.2			19.6
Calumet Brand Special Pure Bone Meal and Potash	4202 6694	Eckerty	Found	1.2	4.0			19.3
Calumet Brand Special Pure Bone Meal and Potash	4202 6719	Dale	Found	1.1	4.3			18.5
"Calumet Brand Grain Grower"	4203		Guaranteed	1.6	2.0	8.0	1.0	---
"Calumet Brand Grain Grower"	4203 6636	Milroy	Found	1.5	3.1	10.6	2.4	---
"Calumet Brand Grain Grower"	4203 6630	English	Found	1.8	2.9	11.2	1.6	---
"Calumet Brand Grain Grower"	4203 6645	Birdseye	Found	1.9	3.1	11.0	1.8	---
Calumet Brand Wheat, Corn and Oats Special	4204		Guaranteed	0.8	4.0	8.0	1.0	---
Calumet Brand Wheat, Corn and Oats Special	4204 6635	Milroy	Found	1.0	5.3	11.6	1.9	---
Calumet Brand Wheat, Corn and Oats Special	4204 6628	English	Found	1.1	5.0	11.2	1.6	---
Calumet Brand Wheat, Corn and Oats Special	4204 6647	Birdseye	Found	1.3	4.9	11.7	1.4	---
Calumet Brand Wheat, Corn and Oats Special	4204 6634	Greensburg	Found	0.8	5.4	12.1	1.9	---
Calumet Brand Dissolved Pure Bone Phosphate	4207		Guaranteed	0.8		18.0	2.0	---
Calumet Brand Dissolved Pure Bone Phosphate	4207 6638	St. Paul	Found	0.8		21.3	2.0	---
Calumet Brand Ammoniated Dissolved Pure Bone and Potash	4208		Guaranteed	1.6	2.0	10.0	1.0	---
Calumet Brand Ammoniated Dissolved Pure Bone and Potash	4208 6682	Lexington	Found	1.7	3.2	12.4	2.3	---
Hopkins Fertilizer Co., New Albany, Ind.—								
Muriate of Potash	3330		Guaranteed		50.0			---
*Muriate of Potash	3330 6068	Salem	Found		51.8			---
Hopkins "Old Times Special Crop Grower"	3374		Guaranteed	1.0	6.0	8.5		---

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅) Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Hopkins Fertilizer Co., New Albany Ind.—									
•Hopkins "Old Times Special Crop Grower"	3874	6073	Campbellsburg	Found	0.9	5.8	6.4	2.3	---
•Hopkins "Old Times Special Crop Grower"	3874	6108	Huntingburg	Found	1.1	6.6	6.8	1.1	---
Hopkins "Old Times Bone Meal"	3428			Guaranteed	3.0				17.0
•Hopkins "Old Times Bone Meal"	3428	6072	Campbellsburg	Found	3.1				15.9
Hopkins "Old Times Wheat and Corn Grower"	3429			Guaranteed	1.0	2.0	8.5		---
Hopkins "Old Times Wheat and Corn Grower"	3429	6723	Jasper	Found	1.2	2.4	7.0	2.3	---
Hopkins "Old Times Pure Raw Bone"	3430			Guaranteed	3.5				21.5
•Hopkins "Old Times Pure Raw Bone"	3430	6089	Salem	Found	3.8				20.3
Hopkins "Old Times Pure Raw Bone"	3430	6558	New Albany	Found	3.9				22.1
Hopkins "Old Times Pure Raw Bone"	3430	6590	Corydon	Found	3.8				21.5
Hopkins "Old Times Pure Raw Bone"	3430	6844	Marysville	Found	3.8				20.5
Hopkins "Old Times Half and Half"	3433			Guaranteed	2.0	2.0	6.0	6.0	---
•Hopkins "Old Times Half and Half"	3433	6822	Corydon	Found	1.6	2.6	7.1	4.5	---
Hopkins "Old Times" Tankage, Bone and Potash	3819			Guaranteed	0.5	2.0	7.0		---
•Hopkins "Old Times" Tankage, Bone and Potash	3819	6071	Campbellsburg	Found	1.0	2.3	7.2	1.6	---
•Hopkins "Old Times" Tankage, Bone and Potash	3819	6104	Huntingburg	Found	0.6	2.7	5.7	1.3	---
Hopkins "Old Times" Tankage, Bone and Potash	3819	6592	Corydon	Found	0.5	1.9	6.7	1.3	---
Hopkins "Old Times" Blood and Potash	3827			Guaranteed	0.5	4.0	7.0		---
•Hopkins "Old Times" Blood and Potash	3827	6070	Campbellsburg	Found	0.6	4.0	6.5	1.6	---
•Hopkins "Old Times" Blood and Potash	3827	6275	Tell City	Found	0.8	4.4	6.6	1.3	---
Hopkins "Old Times" Blood and Potash	3827	6596	Corydon	Found	0.5	3.6	6.8	1.5	---
Hopkins Old Times Fine Ground Bone Meal	3877			Guaranteed	2.5				26.0
Hopkins Old Times Fine Ground Bone Meal	3877	6862	Corydon	Found	2.4				22.6
Hopkins Special	3085			Guaranteed	1.6	2.0	8.0		---
•Hopkins Special	3085	6106	Huntingburg	Found	1.7	2.6	6.8	1.4	---
Hopkins Wheat and Corn Grower	4071			Guaranteed	1.0	2.0	8.0		---
•Hopkins Wheat and Corn Grower	4071	6074	Campbellsburg	Found	1.0	2.3	7.7	1.6	---
•Hopkins Wheat and Corn Grower	4071	6106	Huntingburg	Found	1.0	6.3	6.3	1.2	---
Hopkins Half and Half	4072			Guaranteed	2.0	2.0	6.0	6.0	---
Hopkins Half and Half	4072	6568	Corydon	Found	2.0	1.8	7.5	5.5	---
Hopkins Half and Half	4072	6845	Marysville	Found	1.6	3.2	6.6	6.7	---
Hubbell & Sons Fertilizer Co., L. W., Francesville, Ind.—									
Kainit	3641			Guaranteed	---	12.0			---
•Kainit	3941	6429	Francesville	Found	---	13.5			---
•Kainit	3641	6447	Kewanna	Found	0.1	10.4			0.9
Hubbell's Grain King	3694			Guaranteed	0.8	7.0	6.0		---
•Hubbell's Grain King	3694	6430	Francesville	Found	1.1	7.4	6.1	1.6	---
•Hubbell's Grain King	3694	6449	Kewanna	Found	0.8	8.6	8.3	1.0	---

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•—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.	Official Inspection B.	Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅) Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅) Per Cent.	Total Phosphoric Acid (P ₂ O ₅) Per Cent.
Hubbell & Sons Fertilizer Co., L., W. Francesville, Ind.—								
"Hubbell's Hoosier High Grade Potash and Tankage".....	3743		Guaranteed	0.4	10.0			5.0
*"Hubbell's Hoosier High Grade Potash and Tankage".....	3743 6431	Francesville	Found	0.7	10.7			6.6
*"Hubbell's Hoosier High Grade Potash and Tankage".....	3743 6443	Kewanna	Found	0.8	10.5			7.8
"Hubbell's Hercules 10 per cent. Potash".....	3744		Guaranteed		10.0	5.0		
*"Hubbell's Hercules 10 per cent. Potash".....	3744 6432	Francesville	Found		10.4	5.2	0.5	
Indianapolis Fertilizer Co., Indian- apolis, Ind.—								
Bone and Blood with Potash.....	3396		Guaranteed	1.1	0.8	7.0	0.7	
Bone and Blood with Potash.....	3396 6905	Greenwood	Found	1.0	1.3	7.9	2.7	
Indianapolis Rendering Co., Indian- apolis, Ind.—								
Superphosphate.....	3364		Guaranteed			14.0		
Superphosphate.....	3364 6905	Madison	Found			13.6	3.0	
Potash Special.....	3361		Guaranteed		4.0	10.0		
*Potash Special.....	3361 6049	Leipsic	Found		4.3	10.0	1.4	
Our Grain Grower.....	3551		Guaranteed	0.8	1.0	7.0	1.0	
Our Grain Grower.....	3551 6099	Milan	Found	0.7	1.1	7.4	2.4	
Corn and Wheat Grower.....	3553		Guaranteed	0.8	2.0	8.0	1.0	
*Corn and Wheat Grower.....	3553 6050	Leipsic	Found	1.1	1.8	8.3	2.3	
Our Bone and Potash.....	3553		Guaranteed	0.8	3.0	8.0	1.0	
*Our Bone and Potash.....	3553 6337	Lexington	Found	0.8	2.9	8.7	2.3	
*Our Bone and Potash.....	3553 6343	Roachdale	Found	0.9	2.9	9.2	1.9	
Our Bone and Potash.....	3553 6306	Madison	Found	0.8	3.7	8.1	2.6	
Potatoe and Truck Grower.....	3896		Guaranteed	0.4	8.0	8.0	1.0	
*Potatoe and Truck Grower.....	3896 6132	Pekin	Found	0.6	9.2	9.1	1.6	
Potatoe and Truck Grower.....	3896 6807	Madison	Found	0.4	8.1	10.9	2.3	
Indiana Tanking Co., Muncie, Ind.—								
Ground Bone.....	3893		Guaranteed	2.4				30.0
Ground Bone.....	3893 6908	Muncie	Found	2.8				22.9
I. T. C. Fine Raw Bone.....	4333		Guaranteed	3.3				31.0
I. T. C. Fine Raw Bone.....	4333 6909	Muncie	Found	3.5				18.7
I. T. C. Wheat and Clover Grower.....	4333		Guaranteed	1.6	1.0	8.0	1.5	
I. T. C. Wheat and Clover Grower.....	4333 6901	Muncie	Found	1.7	1.3	4.7	6.4	
Jarecki Chemical Co., Cincinnati, Ohio.—								
Raw Bone and Guano Mixture.....	3896		Guaranteed	1.6	1.0	10.0	6.0	
*Raw Bone and Guano Mixture.....	3896 6374	Eckerty	Found	2.3	1.1	8.3	6.6	
Raw Bone and Guano Mixture.....	3896 6480	Nulltown	Found	1.9	1.3	10.5	6.7	
Onion and Truck Grower.....	3816		Guaranteed	1.6	6.0	6.0	1.0	
*Onion and Truck Grower.....	3816 6097	Greensburg	Found	1.7	7.5	6.1	1.4	
"A" C. O. D. Phosphate.....	4078		Guaranteed			12.0	1.0	
*"A" C. O. D. Phosphate.....	4078 6378	Eckerty	Found			12.2	2.1	
*"A" C. O. D. Phosphate.....	4078 6398	Liberty Mill	Found			12.1	1.6	
"A" C. O. D. Phosphate.....	4078 6431	Nulltown	Found			13.0	3.1	
Fish and Potash Truck Manure.....	4175		Guaranteed	3.3	7.0	8.0	1.0	
*Fish and Potash Truck Manure.....	4175 6379	Vevay	Found	2.9	7.3	9.5	0.8	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.						
Jarecki Chemical Co., The, Sandusky, Ohio.—								
Pure Ground Bone	3912		Guaranteed	2.4				20.0
Pure Ground Bone	3913 6888	French Lick	Found	2.2				27.4
Fish and Potash Potato and Tobacco Food	3914		Guaranteed	0.8	4.0	8.0	1.0	
*Fish and Potash Potato and Tobacco Food	3914 6986	Greensburg	Found	1.0	3.6	8.5	1.4	
Square Brand Phosphate and Potash	3458		Guaranteed		2.0	10.0	1.0	
*Square Brand Phosphate and Potash	3458 6828	Blocher	Found		2.4	9.9	2.0	
*Square Brand Phosphate and Potash	3458 6878	Eckerty	Found		4.1	10.3	2.0	
*Square Brand Phosphate and Potash	3458 6891	Liberty Mills	Found		3.5	10.3	2.1	
Square Brand Phosphate and Potash	3458 6479	Nulltown	Found		1.8	10.3	2.1	
"A" Dissolved Bone and Potash	3896		Guaranteed		4.0	10.0	1.0	
*"A" Dissolved Bone and Potash	3896 6474	Walton	Found		4.4	10.3	2.0	
"A" Dissolved Bone and Potash	3896 6482	Nulltown	Found		3.8	10.5	2.4	
"A" No. One Fish Guano	3897		Guaranteed	1.0	2.0	8.0	1.0	
*"A" No. One Fish Guano	3897 6908	Greensburg	Found	1.2	2.3	8.0	1.7	
*"A" No. One Fish Guano	3897 6329	Blocher	Found	1.1	2.1	7.9	1.6	
"A" No. One Fish Guano	3897 6483	Nulltown	Found	1.3	2.7	8.5	2.5	
"A" No. One Fish Guano	3897 6528	Hebron	Found	1.1	2.4	8.6	2.1	
Little Giant Guano	3898		Guaranteed	0.8	1.0	7.0	1.0	
*Little Giant Guano	3898 6909	Greensburg	Found	1.0	1.8	7.0	1.4	
*Little Giant Guano	3898 6875	Eckerty	Found	1.0	1.6	6.1	1.9	
"A" Lake Erie Fish Guano	3899		Guaranteed	1.2	2.5	8.0	1.0	
*"A" Lake Erie Fish Guano	3899 6876	Eckerty	Found	1.0	2.5	9.4	1.6	
*"A" Lake Erie Fish Guano	3899 6877	Vevay	Found	1.4	4.5	7.7	2.3	
*"A" Lake Erie Fish Guano	3899 6908	Liberty Mills	Found	1.3	3.0	8.5	1.9	
"A" Lake Erie Fish Guano	3899 6473	Nulltown	Found	1.7	2.7	8.9	2.5	
"A" Lake Erie Fish Guano	3899 6597	Hebron	Found	1.4	3.5	9.0	2.5	
Black Soil Special	3950		Guaranteed		10.0	6.0	1.0	
*Black Soil Special	3950 6434	LaFayette	Found		8.4	5.0	1.2	
*Black Soil Special	3950 6446	Kewanna	Found		9.7	6.5	0.6	
Black Soil Special	3950 6539	Lexington	Found		10.0	6.4	1.6	
Acid Phosphate	4140		Guaranteed			14.0	1.0	
Acid Phosphate	4140 6889	French Lick	Found			13.3	2.1	
Jones, J. B., Louisville, Ky.—								
Wheat Bromo	3876		Guaranteed	1.5	0.2			4.0
Wheat Bromo	3876 6868	New Albany	Found	0.9	0.2			2.2
Jones, Robin, Nashville, Tenn.—								
Ground Phosphate Rock	3551		Guaranteed					28.0
Ground Phosphate Rock	3551 8007	LaFayette	Found					29.4
Jones Fertilizing Co., The, Cincinnati, Ohio.—								
"Jones" Miami Valley Phosphate	3389		Guaranteed	1.6	2.0	10.0	2.0	
*"Jones" Miami Valley Phosphate	3389 3358	Madison	Found	1.6	1.8	10.3	2.3	
Jones Fertilizing Co., Louisville, Ky.—								
Jones Corn and Wheat Grower	3555		Guaranteed	0.8	1.0	7.0	1.0	
Jones Corn and Wheat Grower	3555 3309	Evansville	Found	1.0	1.2	8.2	6.7	
Jones Corn and Wheat Grower	3555 6394	Union City	Found	0.8	2.9	7.8	3.7	
Jones Tobacco and Potato Grower	3556		Guaranteed	1.6	4.0	7.0	1.0	
*Jones Tobacco and Potato Grower	3556 6359	Madison	Found	1.4	3.3	8.4	5.3	

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*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Jones Fertilizing Co., Louisville, Ky.—									
Indiana Jones Reliable.....	3597			Guaranteed	0.8	1.5	8.0	1.0	
Indiana Jones Reliable.....	3597	6836	Evansville	Found	1.0	3.1	8.8	5.0	
Jones Indiana Slaughter House Bone	3759			Guaranteed	1.6	2.0	8.0	1.0	
*Jones Indiana Slaughter House Bone	3759	6360	Madison	Found	1.4	2.0	9.1	5.5	
Jones Grain Grower.....	4041			Guaranteed	0.4	4.0	8.0	1.0	
Jones Grain Grower.....	4041	6894	Evansville	Found	0.6	4.6	8.4	4.3	
Jones Grain Grower.....	4041	6819	Amo	Found	0.6	4.6	8.7	4.3	
Kalamazoo Rendering & Fertilizer Co., Kalamazoo, Mich.—									
Kazoo	4167			Guaranteed	3.0	4.0			12.0
*Kazoo	4167	6468	Valparaiso	Found	3.1	4.5			13.6
Kaufman Fertilizer Co., The, Cincinnati, Ohio.—									
Pure Bone	3701			Guaranteed	2.3				20.0
Pure Bone	3701	6837	Inglefield	Found	2.3				27.3
Half and Half	3703			Guaranteed	1.6	1.0	10.0	6.0	
Half and Half	3708	6774	Elizabethtown	Found	1.7	1.5	9.9	7.8	
Half and Half	3708	6887	Freetown	Found	1.6	1.4	10.4	8.3	
Harvest King	3705			Guaranteed	1.0	2.0	8.0	1.0	
*Harvest King	3705	6471	Eaton	Found	1.0	2.3	8.3	1.9	
Harvest King	3705	6724	Delaware	Found	1.0	2.3	9.3	2.0	
Banner Crop Grower.....	3707			Guaranteed	0.8	1.0	7.0	1.0	
Banner Crop Grower.....	3707	6839	Lawrenceville	Found	0.9	1.5	8.0	1.9	
Alkaline Bone and Potash.....	3708			Guaranteed		2.0	10.0	1.0	
Alkaline Bone and Potash.....	3708	6783	Chandler	Found		2.7	10.6	2.3	
"A Special Wheat Fertilizer".....	3986			Guaranteed	1.0	2.0	8.0	1.0	
"A Special Wheat Fertilizer".....	3986	6772	Elizabethtown	Found	1.0	2.3	8.8	2.4	
"A Special Wheat Fertilizer".....	3986	6836	Inglefield	Found	1.0	2.2	9.8	2.7	
Louisville Fertilizer Co., Louisville, Ky.—									
Soluble Bone	2788			Guaranteed	0.8	1.5	8.0	1.0	
*Soluble Bone	2788	6090	Salem	Found	0.7	1.5	8.6	2.2	
Soluble Bone	2788	6875	Salem	Found	0.8	1.7	7.9	4.6	
High Grade Tobacco and Potato Grower	2791			Guaranteed	1.6	4.0	7.0	1.0	
*High Grade Tobacco and Potato Grower	2791	6011	Carmel	Found	1.5	4.1	6.3	2.9	
Eagle Indiana High Grade Dissolved Bone	3340			Guaranteed			14.0	1.0	
Eagle Indiana High Grade Dissolved Bone	3340	6517	College Corner	Found			14.8	2.1	
Eagle Indiana Potash Mixture.....	3341			Guaranteed		2.0	10.0	1.0	
Eagle Indiana Potash Mixture.....	3341	6519	College Corner	Found		1.9	11.9	1.8	
Eagle Indiana Special Corn Grower	3424			Guaranteed	0.8	1.0	7.0	1.0	
*Eagle Indiana Special Corn Grower	3424	6012	Carmel	Found	1.0	1.3	6.3	1.8	
*Eagle Indiana Special Corn Grower	3424	6403	Martinsville	Found	1.1	0.9	6.5	1.5	
Eagle Indiana Phosphate	3564			Guaranteed			12.0	1.0	
*Eagle Indiana Phosphate	3564	6091	Salem	Found			11.9	2.0	
Eagle Indiana Slaughter House Bone	3758			Guaranteed	1.6	2.0	8.0	1.0	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Louisville Fertilizer Co., Louisville, Ky.—									
*Eagle Indiana Slaughter House Bone	3758	6013	Carmel	Found	1.8	2.3	7.6	4.5	---
*Eagle Indiana Slaughter House Bone	3758	6404	Martinsville	Found	1.5	2.0	9.7	2.0	---
Eagle Indiana Slaughter House Bone	3758	6530	Brookville	Found	1.9	2.3	9.0	2.5	---
Eagle Indiana Slaughter House Bone	3758	6733	Troy	Found	1.7	2.3	8.4	2.7	---
Eagle Standard Bone	3897	---	---	Guaranteed	3.6	---	---	---	20.0
Eagle Standard Bone	3864	6733	Troy	Found	3.7	---	---	---	21.6
Eagle Potash Special	3897	---	---	Guaranteed	0.8	7.0	7.0	0.5	---
*Eagle Potash Special	3897	6456	Monticello	Found	1.0	8.1	8.0	2.5	---
Eagle Potash Special	3897	6731	Troy	Found	1.1	6.5	7.3	2.3	---
Eagle Grain Grower	4088	---	---	Guaranteed	0.4	4.0	8.0	1.0	---
*Eagle Grain Grower	4088	6014	Carmel	Found	0.5	4.3	8.0	4.2	---
*Eagle Grain Grower	4088	6406	Martinsville	Found	0.5	5.3	9.3	2.5	---
Eagle Grain Grower	4088	6730	Troy	Found	0.4	4.6	8.8	2.1	---
Eagle Grain Grower	4088	6827	Martinsville	Found	0.8	4.9	9.9	3.2	---
Mace & Mansfield, Greenville, Ohio.—									
Big Crop Bone Phosphate and Potash	3891	---	---	Guaranteed	---	3.0	10.0	2.0	---
Big Crop Bone Phosphate and Potash	3891	6896	Union City	Found	---	2.9	9.9	3.3	---
Mace Prize Taker Tobacco and Potato Special	4021	---	---	Guaranteed	1.0	4.0	8.0	2.0	---
*Mace's Prize Taker Tobacco and Potato Special	4021	6330	Winchester	Found	1.0	4.2	8.4	1.6	---
Major Bros. Packing Co., Misha- waka, Ind.—									
Major's Fertilizer	4217	---	---	Guaranteed	3.5	---	---	---	16.0
*Major's Fertilizer	4217	6459	Walkerton	Found	4.5	---	---	---	21.8
Major's Fertilizer	4217	6904	Mishawaka	Found	3.7	---	---	---	23.6
Mathiason M'fg. Co., P. B., St. Louis, Mo.—									
Increscent Brand Indiana Raw Bone Meal and Potash	4028	---	---	Guaranteed	2.4	3.0	---	---	18.0
Increscent Brand Indiana Raw Bone Meal and Potash	4028	6848	Lexington	Found	2.4	3.1	---	---	18.1
Mayer Fertilizer Co., St. Louis, Mo.—									
Mayer's Anchor Brand St. Louis Bone Meal	3976	---	---	Guaranteed	3.0	---	---	---	18.0
Mayer's Anchor Brand St. Louis Bone Meal	3976	6582	Corydon	Found	3.2	---	---	---	20.4
Mayer Fertilizer Co., St. Louis, Mo.—									
Mayer's Anchor Brand Complete Fertilizer	3977	---	---	Guaranteed	1.6	2.0	8.0	5.0	---
Mayer's Anchor Brand Complete Fertilizer	3977	6906	Corydon	Found	1.3	2.0	8.1	5.2	---
Mayer's Anchor Brand Bone and Potash	3978	---	---	Guaranteed	1.0	1.0	7.0	5.0	---
*Mayer's Anchor Brand Bone and Potash	3978	6468	Holton	Found	1.0	1.9	6.9	5.0	---
Mayer's Anchor Brand Bone and Potash	3978	6570	Corydon	Found	1.0	1.2	8.8	4.9	---

* Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Mayer Fertilizer Co., St. Louis, Mo.—									
Mayer's Anchor Brand Corn and Wheat Grower	3979		Guaranteed	2.0	3.0	8.0	4.0		
*Mayer's Anchor Brand Corn and Wheat Grower	3979 6470	Holton	Found	1.8	3.0	7.4	3.0		
Mayer's Anchor Brand Special Wheat Grower	3981		Guaranteed	1.0	3.0	10.0	4.0		
*Mayer's Anchor Brand Special Wheat Grower	3981 6409	Holton	Found	1.0	3.1	8.3	3.4		
Mayer's Anchor Brand Special Wheat Grower	3981 6580	Corydon	Found	0.9	2.8	11.8	1.8		
Mayer's Anchor Brand Special Wheat Grower	3981 6833	Franklin	Found	1.0	2.1	9.0	3.2		
Mayer's Anchor Brand Soluble Phosphate and Potash	4104		Guaranteed		5.0	8.0	1.0		
Mayer's Anchor Brand Soluble Phosphate and Potash	4104 6835	Inglefield	Found		3.8	7.7	3.4		
Mayer's Anchor Brand Special Corn Grower	4179		Guaranteed	2.0	3.0	8.0	3.0		
Mayer's Anchor Brand Special Corn Grower	4179 6605	Corydon	Found	1.3	2.4	8.7	4.1		
Mayer's Anchor Brand Raw Bone Meal	4182		Guaranteed	3.5					21.0
Mayer's Anchor Brand Raw Bone Meal	4182 6578	Corydon	Found	3.5					21.7
"Mayer's Anchor Brand" Tobacco Dust	4200		Guaranteed	1.0	1.0				
"Mayer's Anchor Brand" Tobacco Dust	4200 6581	Corydon	Found	1.5	1.5				
Michigan Carbon Works, Detroit, Mich.—									
Desiccated Bone	2895		Guaranteed	1.2					25.0
Desiccated Bone	2895 6634	English	Found	1.5					32.2
Homestead A. B. B. Fertilizer	2896		Guaranteed	2.0	1.5	8.0			
*Homestead A. B. B. Fertilizer	2896 6008	Salem	Found	2.3	1.7	8.3	1.6		
*Homestead A. B. B. Fertilizer	2896 6413	Butler	Found	2.2	1.7	8.4	1.5		
Homestead A. B. B. Fertilizer	2896 6557	New Albany	Found	2.2	1.6	9.1	2.6		
Homestead A. B. B. Fertilizer	2896 6695	Milan	Found	2.2	1.7	9.0	1.6		
Red Line Complete Manure	2898		Guaranteed	0.8	1.0	7.0			
*Red Line Complete Manure	2898 6223	Milltown	Found	0.9	1.1	6.7	1.4		
Red Line Complete Manure	2898 6518	Morris	Found	1.0	1.3	8.5	2.2		
Red Line Complete Manure	2898 6635	English	Found	1.0	1.2	7.5	2.2		
Red Line Crop Grower	2899		Guaranteed	1.6	2.0	8.0			
*Red Line Crop Grower	2899 6150	New Albany	Found	1.7	2.3	8.3	2.0		
Red Line Crop Grower	2899 6558	New Albany	Found	1.6	1.9	9.1	1.7		
Red Line Crop Grower	2899 6620	Morris	Found	1.9	2.3	8.7	2.2		
Red Line Phosphate	2900		Guaranteed			14.0			
*Red Line Phosphate	2900 6224	Milltown	Found			12.4	3.3		
Red Line Phosphate	2900 6689	Marengo	Found			16.0	1.6		
Wolverine Phosphate	2901		Guaranteed			10.0			
*Wolverine Phosphate	2901 6433	Monon	Found			9.8	3.0		
Red Line Phosphate with Potash	2902		Guaranteed		3.0	10.0			
*Red Line Phosphate with Potash	2902 6225	Milltown	Found		2.0	9.8	2.8		
Red Line Phosphate with Potash	2902 6619	Morris	Found		2.0	10.6	3.8		
Homestead Potato and Tobacco Special	3602		Guaranteed	2.0	5.0	8.0	1.0		
*Homestead Potato and Tobacco Special	3602 6380	Vevay	Found	2.1	5.4	8.6	2.7		

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Michigan Carbon Works, Detroit, Mich.—									
Homestead 10 per cent. Potash Manure	4078			Guaranteed	0.8	10.0	5.6	2.0	
*Homestead 10 per cent. Potash Manure	4078	6817	Crothersville	Found	1.0	10.9	4.9	1.8	
Homestead 10 per cent. Potash Manure	4078	6699	Birdseye	Found	0.9	9.6	6.3	1.8	
A-1—Potash Fertilizer.	4079			Guaranteed	0.8	8.0	8.0	2.0	
*A-1—Potash Fertilizer.	4079	6151	New Albany	Found	1.1	8.5	8.2	1.9	
*Homestead Special Bone Meal	4080			Guaranteed	1.9				25.0
*Homestead Special Bone Meal	4080	6818	Crothersville	Found	1.0				33.2
Homestead Special Bone Meal	4080	6626	Marengo	Found	1.1				33.0
Monarch Fertilizer Co., Fort Wayne, Ind.—									
Monarch Pure Raw Ground Bone	3600			Guaranteed	4.0				21.0
Monarch Pure Raw Ground Bone	3600	6672	Huntingburg	Found	3.4				20.7
Monarch Pure Raw Ground Bone	3600	6754	Cross Plains	Found	3.5				21.3
Monarch Pure Raw Ground Bone	3600	6757	Birdseye	Found	4.0				21.1
Monarch Grain Grower.	3692			Guaranteed	1.2	2.0	8.0	1.0	
*Monarch Grain Grower.	3692	6196	Georgetown	Found	1.3	1.9	8.7	0.5	
Monarch Grain Grower.	3692	6673	Huntingburg	Found	1.2	2.1	8.1	1.1	
Monarch Grain Grower.	3692	6599	Deerfield	Found	1.1	2.0	9.6	0.3	
Monarch Ideal Grain Grower.	3693			Guaranteed	1.6	2.0	8.0	1.0	
*Monarch Ideal Grain Grower.	3693	3876	Washington	Found	1.2	1.9	8.8	0.3	
*Monarch Ideal Grain Grower.	3693	6377	Jasper	Found	1.4	2.1	7.9	0.7	
Monarch Ideal Grain Grower.	3692	6847	Nabbs	Found	1.1	2.0	9.5	1.6	
Monarch Corn and Wheat Grower	3912			Guaranteed	2.0	2.0	5.0	1.0	
*Monarch Corn and Wheat Grower	3912	6102	Huntingburg	Found	1.7	2.3	5.6	0.1	
*Monarch Corn and Wheat Grower	3912	6197	Georgetown	Found	1.6	1.6	5.6	0.4	
Monarch Corn and Wheat Grower	3912	6846	Nabbs	Found	1.6	2.2	6.9	1.2	
Monarch Corn and Wheat Grower	3912	6836	Deerfield	Found	1.6	2.0	6.4	0.4	
Monarch Onion Special.	3913			Guaranteed	2.0	5.0	6.0	1.0	
*Monarch Onion Special.	3913	6331	Nabbs	Found	1.4	4.0	6.6	0.0	
*Monarch Onion Special.	3913	6390	Osgood	Found	1.5	3.7	5.5	0.6	
Monarch Onion Special.	3913	6753	Cross Plains	Found	1.6	4.6	7.7	0.0	
Monarch Onion Grower	4110			Guaranteed	1.5	8.0	8.0	1.0	
Monarch Onion Grower	4110	6648	Birdseye	Found	1.0	7.6	9.0	1.4	
Morris & Co., Chicago, Ill.—									
Big One—Pure Ground Raw Bone	4001			Guaranteed	3.0				24.0
Big One—Pure Ground Raw Bone	4001	6615	Morris	Found	3.5				27.0
Big One—Pure Ground Raw Bone	4001	6734	Troy	Found	3.6				25.9
Big Two—Pure Bone Meal.	4002			Guaranteed	2.0				28.0
Big Two—Pure Bone Meal.	4002	6628	Oldenburg	Found	1.8				29.9
Big Four—Pure Bone Phosphate.	4004			Guaranteed	4.1	4.0	7.0	5.0	
*Big Four—Pure Bone Phosphate.	4004	6226	Corydon	Found	3.9	4.3	6.0	3.7	
Big Five—Pure Bone Phosphate.	4006			Guaranteed	2.5	1.0	6.0	4.0	
Big Five—Pure Bone Phosphate.	4006	6579	Corydon	Found	2.7	1.1	6.1	3.0	
Big Five—Pure Bone Phosphate.	4006	6621	Oldenburg	Found	2.4	1.2	7.0	2.6	
Big Six—Special Bone Meal.	4008			Guaranteed	0.8				27.0
Big Six—Special Bone Meal.	4008	6616	Morris	Found	1.1				30.2
Big Seven—Special Bone Meal and Potash	4007			Guaranteed	1.2	3.0	8.0	8.0	
*Big Seven—Special Bone Meal and Potash	4007	9096	Salem	Found	2.2	4.0	6.7	8.9	
*Big Seven—Special Bone Meal and Potash	4007	6117	Morris	Found	2.2	4.1	6.3	9.1	
Big Seven—Special Bone Meal and Potash	4007	6573	Corydon	Found	2.1	2.9	9.1	9.4	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official Inspection B.							
Morris & Co., Chicago, Ill.—								
Big Seven—Special Bone Meal and Potash	4097	6641	Horace	Found	1.0	3.3	8.5	6.0
Big Eight—Ammoniated Acid Phos- phate and Potash	4098			Guaranteed	0.8	1.0	7.0	1.0
*Big Eight—Ammoniated Acid Phos- phate and Potash	4098	6280	Troy	Found	1.3	1.6	7.3	1.1
Big Nine—Pure Bone Phosphate	4099			Guaranteed	1.6	5.0	8.0	2.0
Big Nine—Pure Bone Phosphate	4099	6783	North Vernon	Found	1.6	5.1	8.3	1.7
Big Ten—Grain Grower—or 2-8-2	4100			Guaranteed	1.6	3.0	8.0	2.0
*Big Ten—Grain Grower—or 2-8-2	4100	6118	Morris	Found	2.4	2.6	7.1	1.3
*Big Ten—Grain Grower—or 2-8-2	4100	6381	Eckerty	Found	1.9	2.9	8.0	1.6
Big Ten—Grain Grower—or 2-8-2	4100	6735	Troy	Found	2.3	1.8	9.0	1.0
Big Ten—Grain Grower—or 2-8-2	4100	6821	Martinsville	Found	1.7	2.0	8.3	1.3
Morris & Co., Nelson, Chicago, Ill.—								
Big One	3021			Guaranteed	3.2			24.0
Big One	3021	6662	Jasper	Found	4.0			23.4
Big Two	3022			Guaranteed	2.0			23.0
*Big Two	3022	6098	Salem	Found	2.8			26.1
Big Two	3023	6361	Jasper	Found	2.2			26.7
Big Four	3024			Guaranteed	4.1	4.0	5.0	
Big Four	3024	6701	Milan	Found	3.7	4.9	7.0	3.6
Big 5	3025			Guaranteed	2.5	1.0	4.0	5.0
*Big 5	3025	6116	Morris	Found	3.5	1.9	5.3	3.8
*Big 5	3025	6379	Troy	Found	3.1	1.5	5.8	3.8
Big 5	3025	6560	New Albany	Found	2.0	1.6	6.2	3.8
Big Six Special Bone Meal	3303			Guaranteed	0.8			27.0
*Big Six Special Bone Meal	3303	6152	New Albany	Found	1.7			30.7
Big Six Special Bone Meal	3303	6569	New Albany	Found	1.6			29.9
Big Nine—2-8-5 Pure Bone Phos- phate	3984			Guaranteed	1.5	5.0	8.0	1.0
*Big Nine—2-8-5 Pure Bone Phos- phate	3984	6094	Salem	Found	2.1	4.3	8.7	1.7
*Big Nine—2-8-5 Pure Bone Phos- phate	3984	6379	Troy	Found	1.9	5.0	7.3	3.0
Big Nine—2-8-5 Pure Bone Phos- phate	3984	6664	Jasper	Found	1.7	5.3	8.1	1.6
Mt. Pleasant Fertilizer Co., Mt. Pleasant, Tenn.—								
Big Success Mt. Pleasant Special Acid Phosphate	4180			Guaranteed		12.0	2.0	
Big Success Mt. Pleasant Special Acid Phosphate	4180	6702	Lovett	Found		12.6	8.3	
Big Success Wheat and Clover	4193			Guaranteed	0.8	2.0	8.0	3.0
Big Success Wheat and Clover	4193	6654	Greensburg	Found	1.0	3.0	9.2	8.3
Big Success Corn Special	4294			Guaranteed	0.8	4.0	8.0	3.0
Big Success Corn Special	4194	6331	Fort Branch	Found	0.8	4.0	9.3	9.6
Big Success Banner Grain Grower	4195			Guaranteed		2.0	10.0	3.0
Big Success Banner Grain Grower	4195	6553	Greensburg	Found		2.3	11.0	8.2
Big Success Wheat Special	4197			Guaranteed		5.0	10.0	3.0
Big Success Wheat Special	4197	6652	Greensburg	Found		5.1	10.5	3.5
Big Success Wheat Special	4197	6830	Fort Branch	Found		4.4	11.0	4.0
Mt. Pleasant Untreated Phosphate	4198			Guaranteed				28.0
Mt. Pleasant Untreated Phosphate	4198	6370	Salem	Found				27.0
Natural Guano Company, Aurora, Ill.—								
Pulverized Sheep Manure	4150			Guaranteed	2.5	1.5		1.6
*Pulverized Sheep Manure	4150	6473	Hamlet	Found	2.4	1.7		1.9

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Norris Fertilizer Co., Rushville, Ind.—									
Norris' Little Giant Guano.....	4230			Guaranteed	0.8	1.0	7.0	4.0	---
Norris' Little Giant Guano.....	4230	6584	Rushville	Found	0.9	1.1	8.8	7.1	---
Norris' Special Wheat Guano.....	4231			Guaranteed	1.0	2.0	8.0	2.0	---
Norris' Special Wheat Guano.....	4231	6004	Rushville	Found	0.9	2.4	8.5	5.3	---
Northwestern Fertilizing Co., Chi- cago, Ill.—									
Horse Shoe Brand, Pure Ground Bone	2857			Guaranteed	2.4				20.0
Horse Shoe Brand, Pure Ground Bone	2857	6001	Vincennes	Found	2.0				22.7
Horse Shoe Brand, Pure Ground Bone	2857	6717	Jasper	Found	2.2				16.3
Horse Shoe Brand, Corn and Wheat Grower	2860			Guaranteed	1.6	2.0	8.0		---
Horse Shoe Brand, Corn and Wheat Grower	2860	6002	Vincennes	Found	1.8	2.1	8.2	2.7	---
Horse Shoe Brand, Corn and Wheat Grower	2860	6718	Dale	Found	1.6	2.2	8.8	2.3	---
Horse Shoe Brand, Bone and Pot- ash	2861			Guaranteed		2.0	10.0		---
Horse Shoe Brand, Bone and Pot- ash	2861	6550	New Albany	Found		2.0	10.8	2.1	---
Horse Shoe Brand, Melon Grower	2862	6890	Bedford	Found		2.1	10.3	4.1	---
Horse Shoe Brand, Melon Grower	2862	6003	Vincennes	Guaranteed	2.4	2.0	9.0		---
Horse Shoe Brand, Quick Acting Phosphate	2865			Found	2.2	2.0	9.2	2.2	---
Horse Shoe Brand, Quick Acting Phosphate	2865			Guaranteed			10.0		---
Horse Shoe Brand, Quick Acting Phosphate	2865	6354	English	Found			9.8	3.1	---
Horse Shoe Brand, Quick Acting Phosphate	2865	6611	Depauw	Found			9.4	3.7	---
Horse Shoe Brand, National Bone Dust	2866			Guaranteed	2.0	1.5	8.0		---
Horse Shoe Brand, National Bone Dust	2866	6153	New Albany	Found	2.3	2.1	8.8	1.9	---
Horse Shoe Brand, National Bone Dust	2866	6555	New Albany	Found	2.3	1.8	8.8	2.2	---
Muriate of Potash.....	3323			Guaranteed		50.0			---
Muriate of Potash.....	3323	6434	Monon	Found		50.6			---
Horse Shoe Brand, Special Bone Meal	3517			Guaranteed	1.2				25.0
Horse Shoe Brand, Special Bone Meal	3517	6714	Jasper	Found	1.4				24.6
Horse Shoe Brand, Special Potato Grower	3601			Guaranteed	2.0	5.0	8.0	2.0	---
Horse Shoe Brand, Special Potato Grower	3601	6004	Vincennes	Found	2.1	4.3	7.4	1.4	---
Horse Shoe Brand, Special Potato Grower	3601	6361	Aroma	Found	2.1	5.0	8.7	1.5	---
Horse Shoe Brand, Special Potato Grower	3601	6551	New Albany	Found	2.1	4.8	8.8	1.9	---
German Kalnit.....	3851			Guaranteed		12.5			---
German Kalnit.....	3851	6454	Idaville	Found		11.7			---
Horse Shoe Brand, Animal Bone Manure	3948			Guaranteed	0.8	1.0	7.0	1.0	---
Horse Shoe Brand, Animal Bone Manure	3948	6255	English	Found	0.9	1.2	6.4	1.4	---

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Northwestern Fertilizing Co., Chicago, Ill.—									
Horse Shoe Brand, Animal Bone Manure	3948	6716	Jasper	Found	1.1	1.4	7.6	1.8	
Horse Shoe Brand Square Deal Phosphate	3949			Guaranteed			14.0	3.0	
*Horse Shoe Brand Square Deal Phosphate	3949	6461	Reynolds	Found			13.3	3.9	
Horse Shoe Brand Potash Manure	4084			Guaranteed	0.8	3.0	8.0	3.0	
*Horse Shoe Brand Potash Manure	4084	6155	New Albany	Found	0.9	3.4	8.1	3.0	
*Horse Shoe Brand Potash Manure	4084	6383	Aroma	Found	0.9	3.0	8.3	1.7	
*Horse Shoe Brand Potash Manure	4084	6417	Auburn	Found	1.0	3.3	8.0	3.1	
Horse Shoe Brand Potash Manure	4084	6552	New Albany	Found	1.1	3.3	8.7	3.0	
Horse Shoe Brand Potash Manure	4084	6715	Jasper	Found	1.0	3.4	8.1	3.0	
Horse Shoe Brand Special Onion and Vegetable Manure	4086			Guaranteed	0.8	10.0	5.0	3.0	
*Horse Shoe Brand Special Onion and Vegetable Manure	4086	6416	Auburn	Found	0.9	10.7	5.1	1.6	
Ohio Farmers Fertilizer Co., Columbus, Ohio.—									
Fine Ground Bone Meal	2944			Guaranteed	1.6				30.0
Fine Ground Bone Meal	2944	6785	Boonville	Found	2.2				34.4
Fine Ground Bone Meal	2944	6857	Sellersburg	Found	1.7				35.3
Corn, Oats and Wheat Fish Guano	2947			Guaranteed	1.2	2.0	8.0	2.0	
*Corn, Oats and Wheat Fish Guano	2947	6281	Chester	Found	1.0	3.3	9.1	1.0	
*Corn, Oats and Wheat Fish Guano	2947	6344	Saratoga	Found	1.3	2.8	10.3	0.6	
Corn, Oats and Wheat Fish Guano	2947	6856	Sellersburg	Found	1.1	2.1	8.3	2.3	
No. 1 Potato and Tobacco Special	3207			Guaranteed	1.6	4.0	8.0	1.0	
*No. 1 Potato and Tobacco Special	3207	6382	Chrisney	Found	1.7	4.3	8.9	1.3	
*No. 1 Potato and Tobacco Special	3207	6345	Saratoga	Found	1.5	4.3	9.6	1.0	
Wheat Maker and Seeding Down	3208			Guaranteed	0.4	2.5	8.0	1.0	
*Wheat Maker and Seeding Down	3208	6076	Campbellsburg	Found	0.6	2.5	8.8	1.3	
Wheat Maker and Seeding Down	3208	6743	Lovett	Found	0.4	2.3	8.9	2.5	
"A" General Crop Fish Guano	3306			Guaranteed	0.8	1.0	7.0	1.0	
*"A" General Crop Fish Guano	3306	6383	Chrisney	Found	1.0	1.3	7.5	1.1	
"A" General Crop Fish Guano	3306	6794	Boonville	Found	0.7	1.1	8.6	2.4	
"A" Superior Phosphate	3416			Guaranteed			10.0	1.0	
*"A" Superior Phosphate	3416	6075	Campbellsburg	Found			9.6	3.7	
Climax Phosphate	3974			Guaranteed		5.0	10.0		
*Climax Phosphate	3974	6233	College Corner	Found		5.1	11.1	0.9	
Climax Phosphate	3974	6749	Lovett	Found		5.5	10.4	1.4	
Climax Phosphate	3974	6786	Boonville	Found		4.5	12.0	0.6	
Packer Fertilizer Co., Indianapolis, Ind.—									
Packer's Half and Half	3248			Guaranteed	2.0		8.5	6.5	
Packer's Half and Half	3248	6486	Connersville	Found	2.5		10.2	6.0	
Packer's Superphosphate	3253			Guaranteed			14.0		
Packer's Superphosphate	3253	6539	Milroy	Found			14.0	3.1	
Standard Phosphate	3254			Guaranteed			10.0		
*Standard Phosphate	3254	6284	Jasper	Found			9.8	2.4	
Standard Phosphate	3254	6871	Jasper	Found			9.7	3.4	
Packer's Dissolved Bone	3266			Guaranteed		4.0	10.0		
Packer's Dissolved Bone	3266	6487	Connersville	Found		4.6	10.1	1.3	
Packer's Dissolved Bone	3266	6540	Milroy	Found		3.8	10.7	1.3	
Our Wheat Grower	3558			Guaranteed	0.8	1.0	7.0	1.0	
*Our Wheat Grower	3558	6235	Jasper	Found	0.9	1.3	9.3	3.5	
Our Wheat Grower	3558	6870	Jasper	Found	0.6	1.0	7.9	2.5	
Corn and Wheat Special	3559			Guaranteed	0.8	2.0	8.0	1.0	
*Corn and Wheat Special	3559	6133	Borden	Found	0.8	2.5	9.3	2.4	
*Corn and Wheat Special	3559	6388	Eckerty	Found	0.8	1.9	9.5	3.1	
Our Complete Fertilizer	3560			Guaranteed	0.8	3.0	8.0	1.0	
Our Complete Fertilizer	3560	6486	Connersville	Found	0.8	3.3	8.0	3.6	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.	Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official Inspection B.						
Packers Fertilizer Association, Chi- cago, Ill.—							
Boars Head Brand, Potash Phos- phate	2853	Guaranteed	4.0	10.0			
Boars Head Brand, Potash Phos- phate	2853 6519 Liberty	Found	4.0	10.8	3.5		
Boars Head Brand, World of Good Superphosphate	2856	Guaranteed	2.0	1.5	8.0		
Boars Head Brand, World of Good Superphosphate	2856 6810 Belleview	Found	2.2	1.6	8.9	2.6	
Boars Head Brand, Gilt Edge Phosphate	3277	Guaranteed			14.0		
*Boars Head Brand, Gilt Edge Phosphate	3277 6383 Eckerty	Found			13.2	2.5	
Boars Head Brand, Special Bone Meal	3518	Guaranteed	1.3				25.0
*Boars Head Brand, Special Bone Meal	3518 6383 Eckerty	Found	1.3				20.9
Boars Head Brand, Special Bone Meal	3518 6668 Jasper	Found	1.4				25.2
Boars Head Brand, Special Bone Meal	3518 6800 Belleview	Found	1.6				23.2
Boars Head Brand, World of Good Potato and Tobacco Grower.	3631	Guaranteed	2.0	5.0	8.0	2.0	
*Boars Head Brand, World of Good Potato and Tobacco Grower.	3631 6056 Orleans	Found	2.2	5.2	9.1	2.3	
*Boars Head Brand, World of Good Potato and Tobacco Grower.	3631 6162 Brookville	Found	2.1	5.1	8.5	2.9	
*Boars Head Brand, World of Good Potato and Tobacco Grower.	3631 6346 Saratoga	Found	2.0	5.5	8.3	2.9	
*Boars Head Brand, World of Good Potato and Tobacco Grower.	3631 6384 Eckerty	Found	1.7	4.1	8.1	1.4	
Boars Head Brand, Corn and Wheat Grower	3727	Guaranteed	1.6	2.0	8.0	2.0	
*Boars Head Brand, Corn and Wheat Grower	3727 6057 Orleans	Found	1.8	2.1	8.9	2.1	
*Boars Head Brand, Corn and Wheat Grower	3727 6163 Brookville	Found	1.8	2.1	8.3	2.5	
*Boars Head Brand, Corn and Wheat Grower	3727 6386 Eckerty	Found	1.6	2.3	8.6	0.8	
Boars Head Brand, Raw Bone Meal	3783	Guaranteed	3.2				22.0
Boars Head Brand, Raw Bone Meal	3783 6737 Scipio	Found	4.0				19.9
Boars Head Brand, Faultless Grain Grower	3946	Guaranteed	0.8	1.0	7.0	1.0	
*Boars Head Brand, Faultless Grain Grower	3946 6386 Eckerty	Found	1.0	1.0	6.6	2.3	
Boars Head Brand, Faultless Grain Grower	3946 6667 Jasper	Found	1.0	1.2	7.7	2.1	
Boars Head Brand Sure Growth Potash Manure	4086	Guaranteed	0.8	3.0	8.0	2.0	
*Boars Head Brand Sure Growth Potash Manure	4086 6053 Orleans	Found	1.0	3.4	9.6	2.0	
*Boars Head Brand Sure Growth Potash Manure	4086 6164 Brookville	Found	1.0	3.3	11.6	1.5	
Boars Head Brand Sure Growth Potash Manure	4086 6808 Belleview	Found	1.0	3.4	8.5	2.8	
Boars Head Brand Potash Phos- phate Fertilizer	4087	Guaranteed		5.0	10.0	2.0	
*Boars Head Brand Potash Phos- phate Fertilizer	4087 6054 Orleans	Found		4.6	9.2	4.0	
*Boars Head Brand Potash Phos- phate Fertilizer	4087 6165 Brookville	Found		3.9	10.0	3.4	
*Boars Head Brand Potash Phos- phate Fertilizer	4087 6887 Eckerty	Found		4.4	8.5	2.5	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.	Official Inspection B.	Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
Packers Fertilizer Co., The, Cincinnati, Ohio.—								
Animal Guano and Potash	3435		Guaranteed	0.8	4.0	8.0	1.0	
*Animal Guano and Potash	3435 6314	Scottsburg	Found	1.0	4.1	8.7	1.7	
Acidulated Bone and Potash	3436		Guaranteed		3.0	10.0	1.0	
*Acidulated Bone and Potash	3436 6053	Orleans	Found		2.9	9.7	2.1	
*Acidulated Bone and Potash	3436 6165	Brookville	Found		2.1	9.4	2.1	
Acidulated Bone and Potash	3436 6376	Orleans	Found		2.6	11.6	2.3	
Bone Meal	3436		Guaranteed	2.5				20.0
Bone Meal	3436 6776	Dupont	Found	2.0				23.7
Potato, Tobacco and Truck Manure	3317		Guaranteed	1.6	6.0	6.0	1.0	
*Potato, Tobacco and Truck Manure	3317 6453	Idaville	Found	1.5	6.4	6.9	2.0	
An Acidulated Bone	4074		Guaranteed			12.0	1.0	
*An Acidulated Bone	4074 6367	English	Found			11.7	1.6	
An Acidulated Bone	4074 6776	Dupont	Found			12.6	2.1	
Super Phosphate and Potash	4133		Guaranteed	4.0	10.0	1.0		
*Super Phosphate and Potash	4133 6356	English	Found	2.9	9.8	2.2		
Packers Fertilizer Co., St. Bernard, Ohio.—								
Indiana Black Soil Special	3329		Guaranteed		10.0	6.0	1.0	
*Indiana Black Soil Special	3329 6056	Orleans	Found		8.6	7.1	1.9	
*Indiana Black Soil Special	3329 6356	English	Found		8.2	7.4	0.9	
*Indiana Black Soil Special	3329 6442	Kewauna	Found		8.7	7.2	1.2	
"A" Sweepstakes Bone	3900		Guaranteed	1.2	2.5	8.0	1.0	
*"A" Sweepstakes Bone	3900 6059	Orleans	Found	1.2	2.4	9.2	1.8	
*"A" Sweepstakes Bone	3900 6167	Brookville	Found	1.2	2.2	8.8	1.7	
*"A" Sweepstakes Bone	3900 6453	Idaville	Found	1.0	2.5	8.9	2.4	
"A" Sweepstakes Bone	3900 6361	Paoli	Found	1.2	2.5	9.3	2.6	
"A" Bone Phosphate	3901		Guaranteed	1.0	2.0	8.0	1.0	
*"A" Bone Phosphate	3901 6168	Brookville	Found	1.0	2.3	8.7	1.7	
Peró & Stoecker, Louisville, Ky.								
Pure Animal Matter Corn and Wheat Grower	3623		Guaranteed	3.5				10.0
Pure Animal Matter Corn and Wheat Grower	3623 6691	Birdseye	Found	5.6				14.8
Pure Bone Meal	3624		Guaranteed	3.2				22.0
Pure Bone Meal	3624 6693	Birdseye	Found	3.9				20.3
Pure Animal Matter and Potash	3945		Guaranteed	4.0	4.0			10.0
*Pure Animal Matter and Potash	3945 6198	Georgetown	Found	5.9	4.0			11.4
Pure Animal Matter and Potash	3945 6690	Birdseye	Found	5.5	3.4			12.7
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.—								
Rauh's Ideal Phosphate	3185		Guaranteed		10.0			
*Rauh's Ideal Phosphate	3185 6406	Columbus	Found		9.0		2.6	
Rauh's Red Star Phosphate	3186		Guaranteed		14.0			
Rauh's Red Star Phosphate	3186 6329	Franklin	Found		13.4		2.9	
Rauh's Phosphate and Potash	3182		Guaranteed		2.0	10.0		
Rauh's Phosphate and Potash	3182 6763	Chrisney	Found		2.1	11.0	2.3	
Rauh's Special	3192		Guaranteed	1.6	6.0	10.0		
*Rauh's Special	3192 6198	Laurel	Found	1.5	6.7	10.5	1.4	
*Rauh's Special	3192 6332	Lexington	Found	1.8	5.3	11.8	1.2	
Rauh's Half Pure Raw Bone and Half Pure Bone Phosphate	3193		Guaranteed	1.2		8.5	11.0	
*Rauh's Half Pure Raw Bone and Half Pure Bone Phosphate	3193 6306	Knightstown	Found	1.6		9.0	9.9	
*Rauh's Half Pure Raw Bone and Half Pure Bone Phosphate	3193 6322	Franklin	Found	1.1		10.2	10.9	
Sulphate of Potash	3197		Guaranteed		48.5			
*Sulphate of Potash	3197 6333	Lexington	Found		48.6			
Rauh's Grain Grower	3302		Guaranteed		4.0	10.0		
*Rauh's Grain Grower	3302 6407	Columbus	Found		2.6	11.2	0.9	
Rauh's Grain Grower	3302 6530	Rushville	Found		4.2	10.3	1.6	
Rauh's Grain Grower	3302 6764	Chrisney	Found		2.8	10.7	1.9	
Our Soluble Bone	3552		Guaranteed	0.8	1.0	7.0	1.0	
*Our Soluble Bone	3552 6170	Brookville	Found	0.7	1.4	9.1	2.3	
Our Soluble Bone	3552 6531	Rushville	Found	0.7	0.8	7.0	2.3	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.—									
Our Soluble Bone	3552	6761	Chrisney	Found	0.6	1.1	6.8	2.7	---
Corn and Wheat Grower	3553	---	---	Guaranteed	0.8	2.0	8.0	1.0	---
*Corn and Wheat Grower	3553	6171	Brookville	Found	0.8	2.4	9.6	2.0	---
*Corn and Wheat Grower	3553	6172	Brookville	Found	0.8	2.0	9.1	2.3	---
Corn and Wheat Grower	3553	6532	Rushville	Found	0.6	2.3	7.4	2.7	---
Our Dissolved Bone and Potash	3564	---	---	Guaranteed	0.8	3.0	8.0	1.0	---
*Our Dissolved Bone and Potash	3564	6187	Laurel	Found	0.8	3.5	8.2	2.3	---
*Our Dissolved Bone and Potash	3564	6408	Columbus	Found	0.8	3.0	8.8	1.6	---
Our Dissolved Bone and Potash	3564	6811	Madison	Found	0.6	3.3	8.2	2.3	---
Pure Bone	3804	---	---	Guaranteed	1.6	---	---	---	22.0
Pure Bone	3804	6545	Greensburg	Found	1.7	---	---	---	25.2
Pure Bone	3804	6765	Chrisney	Found	1.8	---	---	---	22.2
Peerless Fertilizer	3806	---	---	Guaranteed	0.4	8.0	8.0	1.0	---
*Peerless Fertilizer	3806	6185	Borden	Found	0.5	8.2	9.2	1.3	---
*Peerless Fertilizer	3806	6188	Laurel	Found	0.5	9.0	8.9	1.4	---
*Peerless Fertilizer	3806	6307	Straughn	Found	0.6	9.7	8.8	1.3	---
*Peerless Fertilizer	3806	6409	Franklin	Found	0.5	10.7	8.4	1.4	---
Peerless Fertilizer	3806	6583	Rushville	Found	0.4	7.4	10.4	1.9	---
Peerless Fertilizer	3806	6769	Chrisney	Found	0.4	7.6	10.1	2.0	---
Read Phosphate Co., Nashville, Tenn.—									
Read's Blood and Bone Fertilizer No. One	3087	---	---	Guaranteed	1.6	2.0	8.0	1.0	---
Read's Blood and Bone Fertilizer No. One	3087	6561	New Albany	Found	1.9	2.6	8.1	1.2	---
Read's Wheat and Clover Grower	3089	---	---	Guaranteed	0.8	2.0	10.0	1.0	---
Read's Wheat and Clover Grower	3089	6562	New Albany	Found	1.2	2.0	10.6	1.7	---
Read's High Grade Acid Phosphate	3040	---	---	Guaranteed	---	---	14.0	1.0	---
*Read's High Grade Acid Phosphate	3040	6096	Salem	Found	---	---	13.7	2.6	---
Read's High Grade Acid Phosphate	3040	6567	Corydon	Found	---	---	14.7	2.4	---
Read's Bone and Potash	3042	---	---	Guaranteed	---	2.0	10.0	1.0	---
Read's Bone and Potash	3042	6569	Corydon	Found	---	1.6	10.3	1.5	---
Read's High Grade Special Potash Mixture	4042	---	---	Guaranteed	---	4.0	10.0	---	---
*Read's High Grade Special Potash Mixture	4042	6227	Corydon	Found	---	3.4	10.0	1.6	---
Read's High Grade Special Potash Mixture	4042	6571	Corydon	Found	---	3.7	10.7	1.0	---
Read's Indiana Special	4216	---	---	Guaranteed	0.8	1.0	7.0	---	---
Read's Indiana Special	4216	6563	New Albany	Found	0.9	0.6	10.2	0.1	---
Schmadel, Louis, Evansville, Ind.—									
Schmadel's Bone Meal	2661	---	---	Guaranteed	4.0	---	---	---	16.0
Schmadel's Bone Meal	2661	6814	Evansville	Found	4.7	---	---	---	21.7
Schmadel's Mixed Fertilizer	3371	---	---	Guaranteed	2.0	---	8.0	8.0	---
Schmadel's Mixed Fertilizer	3371	6813	Evansville	Found	2.9	---	4.4	8.5	---
Schmadel's Wheat Grower	4226	---	---	Guaranteed	2.5	0.5	---	---	10.0
Schmadel's Wheat Grower	4226	6812	Evansville	Found	2.8	0.4	---	---	11.0
Smith & Company, Springfield, Ill.—									
Royal Grain Grower	3988	---	---	Guaranteed	1.2	3.0	10.0	3.0	---
*Royal Grain Grower	3988	6097	Salem	Found	1.6	2.9	8.4	2.0	---
Royal Plant Food	3989	---	---	Guaranteed	2.8	2.0	8.0	4.0	---
*Royal Plant Food	3989	6018	Mitchell	Found	2.7	3.0	8.4	4.1	---
Royal Plant Food	3989	6877	Salem	Found	2.8	2.3	8.3	5.0	---
Southern Indiana Fertilizer Co., Boonville, Ind.—									
Soluble Bone	3125	---	---	Guaranteed	1.2	---	10.0	---	---
*Soluble Bone	3125	6192	Boonville	Found	0.8	---	10.3	0.5	---
Soluble Bone	3125	6789	Boonville	Found	0.8	---	9.6	1.3	---
Soluble Bone and Potash	3373	---	---	Guaranteed	1.0	4.0	10.0	---	---
*Soluble Bone and Potash	3373	6193	Boonville	Found	1.0	1.7	11.0	0.6	---
Soluble Bone and Potash	3373	6790	Boonville	Found	0.8	2.3	10.1	1.3	---

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water, Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Southern Indiana Fertilizer Co., Boonville, Ind.—									
"A" Bone Meal	3559			Guaranteed	2.0				20.0
"A" Bone Meal	3559	6788	Boonville	Found	1.3				20.8
Southern Seed Company, Louisville, Ky.—									
Bone Mixture	4241			Guaranteed	1.6	3.0	10.0	6.0	
Bone Mixture	4241	6878	Salem	Found	1.4	3.7	9.9	7.9	
Star Tankage & Fertilizer Works, Vincennes, Ind.—									
Star Raw Bone Meal	3393			Guaranteed	2.9				20.0
Star Raw Bone Meal	3393	6286	Troy	Found	3.4				20.5
Swift & Company, Chicago, Ill.—									
Swift's Superphosphate	2715			Guaranteed	1.6	2.0	8.0	4.0	
Swift's Superphosphate	2715	6069	Salem	Found	1.6	2.0	6.8	3.1	
Swift's Superphosphate	2715	6183	Brookville	Found	1.6	2.2	8.1	1.9	
Swift's Superphosphate	2715	6287	Cannelton	Found	1.8	2.1	8.1	0.6	
Swift's Superphosphate	2715	6351	Charlestown	Found	1.6	2.8	7.0	4.5	
Swift's Superphosphate	2715	6489	Liberty	Found	1.5	2.2	7.5	4.3	
Swift's Superphosphate	2715	6674	Huntingburg	Found	1.6	2.3	6.9	2.8	
Swift's Garden City Phosphate	2716			Guaranteed			14.0		
Swift's Garden City Phosphate	2716	6259	Birdseye	Found			14.0	2.7	
Swift's Garden City Phosphate	2716	6458	Knox	Found			14.9	2.0	
Swift's Garden City Phosphate	2716	6490	Liberty	Found			14.5	2.3	
Swift's Pure Raw Bone Meal	2755			Guaranteed	3.7				23.0
Swift's Pure Raw Bone Meal	2755	6410	Martinsville	Found	4.2				23.7
Swift's Pure Raw Bone Meal	2755	6521	Brookville	Found	4.2				23.0
Swift's Pure Raw Bone Meal	2755	6680	Jasper	Found	4.0				22.7
Swift's Bone Meal	2756			Guaranteed	2.5				25.0
Swift's Bone Meal	2756	6675	Huntingburg	Found	2.4				27.5
Swift's Complete Fertilizer	2760			Guaranteed	1.0	1.0	8.0	3.0	
Swift's Complete Fertilizer	2760	6069	Salem	Found	0.8	0.9	7.5	2.2	
Swift's Complete Fertilizer	2760	6184	Brookville	Found	1.2	1.2	7.3	2.1	
Swift's Complete Fertilizer	2760	6288	Cannelton	Found	1.5	1.5	9.3	0.5	
Swift's Complete Fertilizer	2760	6390	Evansville	Found	1.1	1.1	6.3	3.1	
Swift's Complete Fertilizer	2760	6323	Martinsville	Found	1.0	1.3	7.0	2.5	
Swift's Ammoniated Bone and Potash	2761			Guaranteed	4.7	3.0			16.0
Swift's Ammoniated Bone and Potash	2761	6744	Cannelton	Found	4.1	2.4			17.2
Swift's Vegetable Grower	2827			Guaranteed	3.2	10.0	9.0	1.0	
Swift's Vegetable Grower	2827	6323	Carmel	Found	3.0	10.0	7.1	5.9	
Swift's Special Bone Meal	3084			Guaranteed	0.8				27.5
Swift's Special Bone Meal	3084	6487	Culver	Found	1.5				27.7
Swift's Special Bone Meal	3084	6522	Martinsville	Found	0.8				33.4
Swift's Champion Wheat and Corn Grower	3443			Guaranteed	1.6	2.0	12.0	1.0	
Swift's Champion Wheat and Corn Grower	3443	6289	Dublin	Found	1.6	2.1	11.5	3.1	
Swift's Champion Wheat and Corn Grower	3443	6411	Martinsville	Found	1.7	2.2	10.4	2.5	
Swift's Champion Wheat and Corn Grower	3443	6491	Liberty	Found	1.6	1.9	11.7	3.0	
Swift's Onion, Potato and Tobacco	3444			Guaranteed	1.6	7.0	8.0	3.0	
Swift's Onion, Potato and Tobacco	3444	6100	Salem	Found	1.7	6.8	7.4	2.8	
Swift's Onion, Potato and Tobacco	3444	6290	Cannelton	Found	1.8	7.4	8.0	1.0	
Swift's Onion, Potato and Tobacco	3444	6324	Carmel	Found	1.6	7.6	7.3	3.1	
Swift's Special Phosphate and Potash	3445			Guaranteed		2.0	10.0	1.0	

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.		Sample Taken at		Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅), Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅), Per Cent.	Total Phosphoric Acid (P ₂ O ₅), Per Cent.
	Official	Inspection B.							
Swift & Company, Chicago, Ill.—									
*Swift's Special Phosphate and Potash	3445	6301	Dublin	Found	---	1.9	10.5	1.5	---
Swift's Special Phosphate and Potash	3445	6409	Liberty	Found	---	1.6	9.6	1.4	---
Swift's Bone Meal and Blood	3513	---	---	Guaranteed	3.7	---	---	---	23.0
Swift's Bone Meal and Blood	3513	6676	Huntingburg	Found	3.7	---	---	---	23.0
Swift's Truck Grower	3608	---	---	Guaranteed	0.8	4.0	8.0	2.0	---
*Swift's Truck Grower	3608	5997	Wabash	Found	1.0	4.4	8.1	1.4	---
*Swift's Truck Grower	3609	6101	Salem	Found	0.8	3.8	8.0	1.6	---
Swift's Pure Special Bone Meal	3882	---	---	Guaranteed	0.8	---	---	---	27.5
Swift's Pure Special Bone Meal	3882	6791	Boonville	Found	2.2	---	---	---	26.1
Swift's Pure Bone Meal	3886	---	---	Guaranteed	2.5	---	---	---	26.0
Swift's Pure Bone Meal	3886	6493	Liberty	Found	2.7	---	---	---	24.6
Swift's Pure Bone Meal	3886	6729	Troy	Found	2.4	---	---	---	27.7
Swift's Pure Bone Meal and Potash	3887	---	---	Guaranteed	2.5	3.0	---	---	23.5
Swift's Pure Bone Meal and Potash	3885	6493	Liberty	Found	2.3	3.1	---	---	26.7
Swift's Pure Bone Meal and Potash	3887	6743	Cannelton	Found	2.1	3.1	---	---	26.8
Swift's Pure Bone Meal and Blood	3889	---	---	Guaranteed	3.7	---	---	---	23.0
Swift's Pure Bone Meal and Blood	3889	6728	Troy	Found	3.5	---	---	---	27.4
Swift's Sulphate of Potash	3993	---	---	Guaranteed	---	50.0	---	---	---
*Swift's Sulphate of Potash	3993	6439	Culver	Found	---	50.1	---	---	---
Kainit	3999	---	---	Guaranteed	---	12.0	---	---	---
*Kainit	3999	6455	Idaville	Found	---	12.3	---	---	---
Swift's Potato, Celery and Onion	4034	---	---	Guaranteed	0.8	10.0	5.0	2.0	---
*Swift's Potato, Celery and Onion	4034	6292	Cannelton	Found	0.8	6.1	5.1	0.5	---
Swift's Potato, Celery and Onion	4034	6726	Troy	Found	1.1	9.0	5.7	1.7	---
Swift's Potato Celery and Onion	4034	6727	Troy	Found	1.0	9.4	4.6	1.4	---
Swift's Potato, Celery and Onion	4034	6906	Nappanee	Found	1.0	12.0	6.0	1.5	---
Tennessee Chemical Co., Nashville, Tenn.—									
Ox Raw Bone	3298	---	---	Guaranteed	2.4	---	---	---	20.0
Ox Raw Bone	3298	6583	Corydon	Found	2.4	---	---	---	28.2
Ox Indiana Potash Mixture	3334	---	---	Guaranteed	---	2.0	10.0	1.0	---
*Ox Indiana Potash Mixture	3334	6228	Corydon	Found	---	1.9	11.4	3.9	---
Ox Indiana Special Corn Grower	3426	---	---	Guaranteed	0.8	1.0	7.0	1.0	---
*Ox Indiana Special Corn Grower	3426	6229	Corydon	Found	1.0	1.4	6.7	1.5	---
Ox Indiana Slaughter House Bone	3442	---	---	Guaranteed	1.6	2.0	8.0	1.0	---
*Ox Indiana Slaughter House Bone	3442	6230	Corydon	Found	1.6	2.1	8.9	4.1	---
Ox Indiana Slaughter House Bone	3442	6584	Corydon	Found	1.5	2.0	8.2	2.0	---
Ox Grain Grower	4040	---	---	Guaranteed	0.4	4.0	8.0	1.0	---
Ox Grain Grower	4040	6547	Madison	Found	0.4	2.8	8.0	6.3	---
Ox Grain Grower	4040	6585	Corydon	Found	0.7	4.9	9.1	4.7	---
Ox Potash Special	4168	---	---	Guaranteed	0.8	7.0	7.0	0.5	---
*Ox Potash Special	4168	6389	Vevay	Found	0.9	5.7	7.2	8.0	---
Turley Co., T. J., Owensboro, Ky.—									
Ideal Grain Grower	4213	---	---	Guaranteed	0.8	3.0	8.0	1.0	---
Ideal Grain Grower	4213	6745	Rockport	Found	0.8	2.5	9.3	2.9	---
Ideal Bone	4214	---	---	Guaranteed	2.4	---	---	---	22.0
Ideal Bone	4214	6746	Rockport	Found	2.1	---	---	---	29.3
Tuscarora Fertilizer Co., Chicago, Ill.—									
Tuscarora Raw Bone	3461	---	---	Guaranteed	3.7	---	---	---	23.0
Tuscarora Raw Bone	3461	6742	Tell City	Found	4.0	---	---	---	23.7
Tuscarora Standard	3463	---	---	Guaranteed	1.6	2.0	8.0	2.0	---
*Tuscarora Standard	3463	6136	Pekin	Found	1.5	1.9	8.5	1.5	---
Tuscarora Standard	3463	6472	San Pierre	Found	1.8	2.3	7.4	2.3	---
Tuscarora Standard	3463	6739	Tell City	Found	1.4	2.1	8.1	1.4	---
Bone and Potash	3464	---	---	Guaranteed	---	2.0	10.0	2.0	---
Bone and Potash	3464	6758	Chrisney	Found	---	2.1	9.5	1.1	---
Acid Phosphate	3466	---	---	Guaranteed	---	---	14.0	2.0	---

*—Sample received in the spring.

Report of Inspections—Continued.

LABEL.	Number.	Sample Taken at	Nitrogen (N), Per Cent.	Potash (K ₂ O) Soluble in Water Per Cent.	Soluble and Reverted Phosphoric Acid (P ₂ O ₅) Per Cent.	Insoluble Phosphoric Acid (P ₂ O ₅) Per Cent.	Total Phosphoric Acid (P ₂ O ₅) Per Cent.
	Official Inspection B.						
Tuscarora Fertilizer Co., Chicago, Ill.—							
*Acid Phosphate	3465 6187 Pekin	Found			14.4	0.9	
Acid Phosphate	3466 6769 Chrisney	Found			15.4	1.0	
Animal Bone	3466	Guaranteed	2.4				24.0
Animal Bone	3469 6740 Tell City	Found	2.5				23.6
A. B. Norris Fertilizer Co. Brand							
"Special Corn and Wheat"	3611	Guaranteed	1.2	2.0	8.0	2.0	
A. B. Norris Fertilizer Co. Brand							
"Special Corn and Wheat"	3611 6529 Rushville	Found	1.3	2.0	8.2	1.4	
Tuscarora Garden	3629	Guaranteed	2.8	4.0	8.0		
*Tuscarora Garden	3629 6138 Pekin	Found	2.9	5.2	7.8	3.5	
Big (4) Four	3630	Guaranteed	1.6	4.0	7.0		
*Big (4) Four	3630 6139 Pekin	Found	1.7	4.3	7.0	2.7	
Tuscarora Chief	3723	Guaranteed	0.8	4.0	8.0		
*Tuscarora Chief	3732 6140 Pekin	Found	1.0	3.8	8.2	1.2	
Tuscarora High Grade	3815	Guaranteed		8.0	10.0		
*Tuscarora High Grade	3816 6994 Columbia City	Found		8.1	9.3	1.6	
*Tuscarora High Grade	3816 6141 Pekin	Found		7.6	9.3	1.9	
Grain Special	4011	Guaranteed	0.8	3.0	8.0		
*Grain Special	4011 6142 Pekin	Found	1.2	3.7	7.8	1.8	
Grain Special	4011 6741 Tell City	Found	0.7	2.7	8.3	0.3	
Ward & Co., Montgomery, Chicago, Ill.—							
Ward's Excelsior Corn Fertilizer	3856	Guaranteed	1.6	2.0	8.0	4.0	
*Ward's Excelsior Corn Fertilizer	3856 6396 Churubusco	Found	1.7	1.9	7.1	2.1	
Weidman, Augustus, Hagerstown, Ind.—							
Corn Grower	4139	Guaranteed	0.7	4.0	9.0	1.0	
*Corn Grower	4139 6308 Straughn	Found	0.8	3.9	8.6	2.5	
Western Fertilizer Works, Indian- apolis, Ind.—							
Wheat and Clover Grower	3396	Guaranteed	1.2	1.5	8.0	1.0	
Wheat and Clover Grower	3396 6612 Depauw	Found	1.1	1.8	8.0	2.4	
Wheat and Corn Special	3397	Guaranteed	0.8	1.0	8.0	0.5	
*Wheat and Corn Special	3397 6173 Brookville	Found	0.7	2.1	7.6	1.3	
Wheat and Corn Special	3397 6523 Rushville	Found	0.9	1.0	7.5	2.5	
Spring Special	3908	Guaranteed	0.8	3.0	8.0	0.5	
*Spring Special	3908 6174 Brookville	Found	0.6	2.7	7.2	1.2	
Truck Special	4135	Guaranteed	1.5	5.0	8.0	0.5	
Truck Special	4135 6709 Dillsboro	Found	1.2	3.0	7.4	2.4	
Winchet Fertilizer Co., The, Day- ton, Ohio.—							
"Onion and Truck Fertilizer"	3594	Guaranteed	1.5	8.0	8.0	1.0	
*"Onion and Truck Fertilizer"	3594 6007 Bremen	Found	1.7	7.2	8.5	3.6	
"Onion and Truck Fertilizer"	3594 6238 Kitchell	Found	1.7	7.1	8.5	2.3	
*"Onion and Truck Fertilizer"	3594 6394 Columbia City	Found	1.3	7.3	8.5	2.5	
"Miami Phosphate"	3596	Guaranteed	1.1	3.0	9.0	1.0	
*"Miami Phosphate"	3596 6412 Columbus	Found	0.9	2.5	8.9	1.3	
"Miami Phosphate"	3596 6752 Cross Plains	Found	1.0	2.7	9.1	1.7	
"Miami Phosphate"	3596 6896 Union City	Found	0.7	2.9	9.8	2.3	
"Superior Pure Raw Bone"	3597	Guaranteed	8.0				23.0
*"Superior Pure Raw Bone"	3597 6396 Columbia City	Found	8.8				23.3
"Superior Pure Raw Bone"	3597 6750 Cross Plains	Found	3.5				22.3
"A" Gem Phosphate	3939	Guaranteed	0.5	2.0	8.0	1.0	
*"A" Gem Phosphate	3939 6424 Kendallville	Found	0.8	1.9	8.2	2.2	
"A" Gem Phosphate	3939 6964 Columbus	Found	1.1	2.3	9.1	4.2	
"A" Spot Cash Fertilizer	3940	Guaranteed	1.5	2.0	9.0	2.0	
*"A" Spot Cash Fertilizer	3940 6060 Leipsic	Found	1.6	2.7	8.4	4.5	
"A" Spot Cash Fertilizer	3940 6751 Cross Plains	Found	1.2	2.0	11.8	1.6	
"A" Ruby Phosphate	3941	Guaranteed	0.5	1.0	9.0	1.0	
*"A" Ruby Phosphate	3941 6399 Medora	Found	0.9	1.1	8.4	2.2	
"A" Ruby Phosphate	3941 6706 Dillsboro	Found	0.9	1.3	11.1	0.9	

*—Sample received in the spring.

TABLE VII.—Names and Addresses of Persons from Whom Samples were Secured

Address.	Name.	Inspection Numbers B.
Alfordsville	J. Allen	6304, 6305,
Amo, R. R. No. 1	O. P. Phillips	6319
Apalona	Wm. Cassidy	6393
Argos	Isaac Reed & Son	6439, 6440
Atlanta	E. T. Haworth	6361, 6362
Auburn	Culberson Hardware Co. Troolinger & Co.	6415, 6420 6416, 6417
Aurora	Z. A. Davidson	6706
Avilla	M. E. Stewart	6418, 6419
Batesville	Chris. Schrank	6023
R. R. No. 1	Michael Benz	6024
	Albert Bultman	6107, 6108, 6109, 6110, 6111
Bedford	Bedford Hardware Co.	6390
Bentonville		
R. R. No. 15	Lewis Kemmer	6373
R. R. No. 15	Carl R. Jackson	6289, 6301
Birdseye	John H. Schnell	6243, 6244, 6250, 6245, 6246, 6247, 6248, 6757
	Albert J. Graves	6090, 6091, 6093
Blocher	G. W. Gudgel	6328, 6330
Boonville	J. Walter Wilburn	6782
	James N. Taylor	6784, 6785, 6786
	Southern Indiana Fertilizer Co.	6192, 6193, 6788, 6789, 6790
	Alman R. Tweedy	6791
	Charles Roth	6189, 6190, 6191
Borden	Elrod & McKinley	6126, 6127, 6128, 6129
	H. Shoemaker & Son	6130, 6131
	P. C. Peirs	6123
	Walter Scott	6135
	Henry McKinley	6143
Brazil	Lewis McNutt	6008
Bremen	J. H. & H. E. Ringle Co.	6007
Brookville	Jno. C. Shirk	6520
R. R. No. 7	Mike Pfum	6176, 6177, 6178, 6179
	A. Bossert	6175, 6183, 6184, 6521, 6522
R. R. No. 6	J. F. Klemme & Son	6168, 6169, 6164, 6165
R. R. No. 6	Peter Quante	6166, 6167, 6168, 6169
R. R. No. 6	John H. Gesell	6170, 6171, 6172
R. R. No. 6	Henry L. Gesell	6173, 6174
	Fries & Geis	6181, 6182
Brownstown	Bolls Hardware Co.	6316
Brownsville	Mat Carlos	6499
Butler	Eugene Hubbard	6413
Campbellsburg	E. S. Sappenfield	6051, 6052
	Stratton Bros.	6070, 6071, 6072, 6073, 6074
	Wm. Wilkins	6075, 6076
	McCoy & Hardin	6077, 6078, 6079
	G. M. Chastain	6080, 6081, 6082, 6083
Canaan	Elmer J. Ralston	6545, 6547
Cannelton	Peter Clemens & Sons	6265, 6266, 6267, 6268, 6290 6292, 6743, 6744

Names and Addresses of Persons.—Continued.

Address.	Name.	Inspection Numbers B.
Carmel -----	Foster & Gannon ----- Kinger Bros. -----	6011, 6012, 6013, 6014 6334
Carthage -----	A. B. Norris -----	6520
Centerville ----- R. R. No. 11	Wm. Wright -----	6294, 6295
Charlestown -----	D. H. Huffstaller ----- J. L. Cole -----	6347 6351
Charlottesville ----- R. R. No. 1	Rob't. S. N. Oldham -----	6302, 6315
Chrisney, R. R. No. 1	William Link, Jr. ----- Emmett Parker ----- S. W. Gwaltney ----- Bert Toole ----- William Hessen -----	6758, 6759 6760 6761, 6762, 6763, 6764, 6765 6769, 6767 6282, 6283
Churubusco -----	Perry J. Waylor -----	6306
College Corner ----- R. R. No. 3	Frank Hawley ----- Chas. Hertrick ----- Mahlon Morris ----- E. L. Quick -----	6517 6518 6519 6283
Columbia City -----	W. W. Miller ----- Burnsworth Bros. -----	5994 5995, 6394, 6895
Columbus ----- R. R. No. 10 R. R. No. 10	Newby & Burnett ----- John Taylor ----- Wm. Beaty ----- C. C. Richardson -----	6868 6773, 6774 6860, 6863 6412, 6864
Connersville ----- R. R. No. 6 R. R. No. 1 R. R. No. 2 R. R. No. 10	John Tate ----- F. L. Coltrane & P. A. Davis ----- Moffitt & Simpkins ----- D. W. Caldwell ----- Amos L. Johnson ----- L. A. Kline -----	6479 6485, 6486, 6487 6493, 6500 6501, 6502, 6503 6504, 6505, 6506 6507, 6508, 6509, 6510
Cortland -----	R. R. Al. Williams -----	6887
Corydon -----	John F. Habermel ----- Joe Bender ----- Fred W. Kost ----- Lee C. Smith ----- V. H. Bullett & Sons ----- Frank P. Lotich ----- Sam Wolf -----	6564, 6565, 6566, 6568, 6567, 6568 6800, 6210, 6226, 6227, 6567, 6568 6569, 6570, 6571, 6572, 6573 6578, 6579, 6580, 6581, 6582, 6585 6583, 6584, 6585 6215, 6216, 6217, 6218, 6219, 6220 6221, 6222, 6589, 6590, 6591, 6592 6593, 6594, 6595, 6596, 6597, 6598 6599, 6591, 6593 6211, 6212, 6213, 6214, 6500, 6501, 6502 6228, 6229, 6230
Cottage Grove -----	Aaron Gardner -----	6831, 6232
Cross Plains -----	Jno. P. Jarvis ----- Dan'l. Damaree ----- A. W. Lomatsch -----	6750, 6751, 6752 6753, 6754 6756
Crothersville -----	John E. Belden -----	6317, 6318
Culver, R. R. No. 15	M. J. Osborn -----	6437, 6438, 6444, 6445
Dale -----	Lorenz Ofer & Son ----- Edwin Wedeking -----	6156, 6157, 6158, 6708, 6709 6159, 6160, 6161, 6710, 6711, 6712 6718, 6719
Deerfield -----	Jacob Huber -----	6898, 6899

Names and Addresses of Persons.—Continued.

Address.	Name..	Inspection Numbers B.
Delaware -----	John Crum	6608, 6609
	Wm. Dunbar	6723
	Henry Behlmer	6724,
	R. R. Henry Drockleman	6728
Depauw -----	John Atkins	6606, 6609
	Shirman T. Briscoe & Co.	6610, 6611
	Marshall Vaughn	6612
Dillsboro -----	George Homann	6703
	Fleming & Johnson	6704, 6705
Dublin, R. R. No. 1	Wm. Lamberson	6260
	Ed Morgan, Jr.	6262, 6263, 6264
	A. K. Zeigler	6274
Dubois -----	Dubois Implement Co.	5993
Dupont -----	T. W. Bland & Bro.	6775, 6776
East Germantown.	B. F. Sourbeer	6475, 6476, 6477
Eaton -----	Lee Pancoast	6471
Eckerty -----	Uriah W. Morting	6367, 6368, 6361
	William Car	6360
	Sheldon Sinclair	6370, 6371, 6372, 6388
	George W. Clements	6373, 6374, 6375, 6376, 6378
	Daniel S. Fields	6382, 6383, 6384, 6385, 6386, 6397
	Vanwinkle & Morting	6694
Elwood -----	J. H. Morris	6355, 6356
English -----	John T. Atkins	6242, 6254, 6255, 6257, 6262, 6269,
	James M. Brown	6230, 6231, 6232, 6233, 6234, 6235,
	W. L. Gregory & Sons	6255, 6257, 6258, 6260, 6257, 6262,
	.....	6242, 6243, 6244
Evansville -----	Rosenberger-Klein Co.	6245, 6252, 6253, 6265, 6266, 6297
	West Side Implement Co.	6800, 6801
	Louis Schmadel	6802, 6803, 6804
	Heldt Bros. & Voelker Co.	6812, 6813, 6814
Everton -----	.....	6815, 6816, 6817, 6818, 6820
	B. R. Lake	6478, 6480, 6481, 6482, 6483, 6484
Fort Branch -----	John McCarty	6830, 6831
Francesville -----	L. W. Hubbell & Sons Fertilizer Co.	6430, 6430, 6431, 6432
Franklin -----	Jarvis Alexander	6400, 6328, 6329
	Dave Forsyth	6833
French Lick -----	G. W. Clemens	6888, 6889
Garden City -----	Scott Cook	6406, 6407, 6408
Georgetown -----	John H. Thomas	6574, 6575
	Andrew Sears	6194, 6195, 6576, 6577
	Utz & Utz	6196, 6197
	Joe Stark	6198
Greenfield -----	Geo. W. Parker & Son	6299, 6300, 6301
Greensburg -----	.....	6066, 6067, 6068, 6069
	Edward M. Hamilton	6023, 6024, 6025, 6026, 6027, 6028,
	Geo. M. Ewing & McKee	6033
	Davis & Clark	6524
	Frank Gray	6062, 6063, 6064, 6065, 6384
	C. Barnes & E. A. Buckley	6543
R. R. No. 11	J. A. Miller	6029, 6080, 6081

Names and Addresses of Persons.—Continued.

Address.	Name..	Inspection Numbers B.
Greensburg		
R. R. No. 8	Court Barnes	6544
	Corbett & Rohe	6545, 6562, 6563, 6564
	Ed. Buckley	6550, 6551
	Wilber Donnell	6555, 6553, 6557
	S. V. Pleak	6035
Greenwood	H. S. Yeager	6906
Hamlet	Peter Lebens	6467
	Porter Jack	6473
Hammond	Beckman Supply Co.	6466
Haubstadt	F. D. Lohring	6332
Hayden	N. Sullivan	6398
	J. W. Price	6400, 6401
Hebron	Wm. Nelson	6527, 6528
Henryville	Chas. L. Francke	6853
	Z. Taylor	6334, 6339, 6340, 6341, 6342, 6354,
		6855
Holland	Wellman & Miller	6103, 6104, 6105, 6106, 6074, 6075,
		6079
Holton	Isaac Morris	6469, 6469, 6470
Horace	Peter Fousett	6840
Huntingburg	Wm. Reutepohler	6102, 6072, 6073
	Louis Katterhenry	6361, 6085, 6090, 6077, 6073, 6079
Idaville	Godlove & Merriman	6453
	J. Renwick	6455
Indianapolis	Frank Hilgemeler	6350
Inglefield	Gus Schumacker	6835
	Ambrose R. Hornby	6836, 6837
Jasper	George P. Wagner	6270, 6273, 6277, 6558, 6559, 6060,
	Conrad Bates	6281, 6283, 6288, 6294, 6295, 6066
	Eckert & Blessinger	6284, 6285, 6267, 6268, 6069, 6270,
	Albert M. Bohnert	6271
		6707, 6714, 6715, 6716, 6717
		6720, 6721, 6722
Julietta	Walter H. Harris	6525, 6526
Kendallville	C. S. Southwick	6424
	J. T. Stohal	6425
Kewanna	F. B. Tuttle	6442
R. R.	Geo. M. Calvin	6443, 6447, 6448
	Baske Smott	6446
	T. N. Willoughby	6449
Kitchell		
R. R. No. 8	Harry Allen	6238
Knightstown	F. B. Wilkinson & Co.	6306
Knox	Horner & Kreuter	6458
LaFayette	Dreyfus Packing & Provision Co.	6397
	Fred Reule	6426
Laurel	G. Ensminger	6185
R. R. No. 1	Frank L. McKee	6186, 6187, 6188
Lee	Arthur Parcel	6133, 6434

Names and Addresses of Persons.—Continued.

Address.	Name.	Inspection Numbers B.
Leipsic -----	M. Ingram -----	6036, 6037, 6038, 6039
	Tom Eubank -----	6046
	H. Huston -----	6049, 6050
	E. S. Carr -----	6060
Letts Corner -----	Letts Hardware Co. -----	6641
Lexington -----	F. M. Campbell -----	6838, 6843, 6848
R. R. No. 3	J. B. Eppley -----	6830
	S. W. Jennings -----	6841, 6880
R. R. No. 1	Friedline & Son -----	6819
	Frank Stein -----	6327
	Fred Hensler -----	6333, 6333
Liberty -----	J. A. Bertch & Son -----	6234, 6235, 6483, 6516
R. R. No. 7	Perry LaFuse -----	6489, 6490, 6491, 6492, 6493, 6494
	James Driggs -----	6495, 6496, 6497
R. R. No. 2	Dan'l Breen -----	6511, 6512, 6513, 6514, 6515
	Jas. E. Wilson & John Burke -----	6199, 6200, 6201
R. R. No. 4	Frank Pritchard -----	6327
Liberty Mills -----	Ed. Boner -----	6392, 6393
Lincoln City -----	Fred Dendinger -----	6307, 6308
Lovett -----	Henry Roetkin -----	6709
	Henry Hargeshimer -----	6748, 6749
Madison -----	Conrad Heck -----	6357, 6365, 6366, 6367
	W. H. Benefiel -----	6790
R. R.	Mat Roheman -----	6797, 6798
R. R. No. 1	L. E. Gordon -----	6548
R. R. No. 2	W. L. Denny -----	6808, 6809, 6810
R. R. No. 3	Elmer J. Ralston -----	6549
	Heise & Sons -----	6353, 6353, 6354
R. R. No. 4	George M. Keller -----	6792, 6793, 6794
	Heise Mill Co. -----	6795, 6796, 6811
	Geo. T. Nicoll -----	6358, 6359, 6360
Marengo -----	Richard Alspaugh -----	6249
	Wood & Batman Hardware Co. -----	6313, 6614
	W. E. Jennie & Sons -----	6239, 6240, 6241, 6225, 6639
	Chas. D. Summers -----	6250, 6251, 6252
	H. K. Jenkins -----	6240, 6247
Moriah Hill -----	Sebastian Paddock -----	6119, 6120, 6121
Martinsville -----	Abraham & Son -----	6821, 6822
	J. W. Ellis -----	6823, 6823, 6824
	B. F. Krinet -----	6408, 6404, 6405, 6827
	J. C. Kiefer -----	6410, 6411
Marysville -----	J. O. Graves & Son -----	6844, 6845
Medora, R. R. -----	T. J. Plummer -----	6309
Milan -----	E. H. Shockley -----	6700, 6701
Milford -----	T. L. Hammond -----	6005
	Milton S. Brumbaugh -----	6006, 6008
	Warren Darst -----	6009, 6010
	Prof. Warren -----	6427
Milltown -----	Willard Flanigan -----	6607
	J. E. Rodgers -----	6223, 6224, 6226
Milroy -----	W. L. McKee -----	6535, 6538, 6537
	Clifford Powers -----	6539, 6540
Milton -----	Lewis Killeber -----	6268
	Omar Manlove -----	6271
Mishawaka -----	Major Bros. Packing Co. -----	6904

Names and Addresses of Persons.—Continued.

Address.	Name..	Inspection Numbers B.
Mitchell -----	Joe Chess -----	6018
Monon -----	Joseph Saltzman -----	6903
R. R. No. 3	G. M. Haring -----	6428
Montgomery -----	Dally Bros. -----	6849, 6850, 6851
Monticello -----	Condo & Jenkins -----	6456
Morris -----	Geo. F. Siefert -----	6116, 6117, 6118, 6615, 6616, 6617, 6618, 6619, 6620
	J. W. Wiesenback & Behlmer -----	6113, 6114
Mount Liberty ----	Lee Toggard -----	6438
Muncie -----	Indiana Tanking Co. -----	6891, 6892, 6898
Nabb -----	Wilmer Smith -----	6846, 6847
	W. J. Smith & Cole -----	6331
Nappanee -----	J. S. McEntoffer -----	6906
	Laughlin Bros. Co. -----	6015
	W. O. Yarian -----	6016
New Albany -----	Thorn & Givin -----	6147, 6148, 6153, 6155, 6550, 6551, 6552, 6553, 6554, 6556
	H. L. Graf -----	6149, 6150, 6151, 6152, 6556, 6557, 6558, 6559, 6560
	Brown Seed Store -----	6144, 6145, 6146, 6561, 6562, 6563
	J. J. Scharf -----	6858
	Rudy Alles -----	6359
New Bellsville ----	William Kalng -----	6885
New Salem -----	James Rogers -----	6523
Noblesville -----	T. E. Bowles -----	6320, 6321, 6322
North Vernon -----	Tripp Bros -----	6390, 6783, 6789, 6770, 6771, 6772
Oatesville -----	Wm. Gardner -----	6840
Odon -----	Odon Hardware Co. -----	6826
Oldenburg -----	John Struewing -----	6621, 6622
Orleans -----	George W. Celveland -----	6040, 6041, 6043, 6043, 6044, 6371, 6873
	Harry A. Brooks -----	6055, 6058, 6059, 6876
	W. A. Hallowell -----	6053, 6054, 6056, 6057
Osgood -----	Echart Hardware Co. -----	6390
R. R. No. 1	Henry Gookins -----	6756
Ossian, R. R. No. 3	F. P. Hoopengardner -----	6379
Palmyra -----	R. R. Abraham Rudolph -----	6935
	R. R. Levi Sappenfield -----	6836, 6867
Paoli -----	J. P. Wilson -----	6831
Pekin -----	O. W. Gross -----	6852
	Marshall Bros. -----	6123
	Edgar S. Marshall -----	6124, 6125, 6123
	A. G. Blackman -----	6136, 6137, 6138, 6139, 6140, 6141 6142
Plymouth -----	F. A. Forbes -----	6441
Portland -----		
R. R. No. 12	H. Y. Ingle -----	6900, 6901, 6902
Rensselaer -----	W. W. Frances -----	6454

Names and Addresses of Persons.—Continued.

Address.	Name.	Inspection Numbers &c
Reynolds -----	G. H. Thomas -----	6451
Richmond -----	Chas. Shickleman -----	6285
R. R. No. 6 -----	Chas. Huffman -----	6281
Ridgeville -----	Hollowell & Wall -----	6019, 6020
-----	H. Y. Engle & O. Y. Furrow -----	6321, 6322
R. R. No. 15 -----	Dell Jessup -----	6346
Roachdale -----	-----	-----
R. R. No. 1 -----	David Hosteller -----	6343
Rochester -----	L. G. Holtz -----	6436
Rockport -----	The T. J. Turley Co. -----	6745, 6746
-----	Joe Beeler -----	6747
Rushville -----	O'Neal Bros. -----	6530, 6531, 6532, 6533
-----	V. W. Norris -----	6534, 6604
Salamonia -----	Wm. Getting -----	6326
Salem -----	T. J. Graves & Co. -----	6097, 6098, 6099, 6100, 6101, 6877
-----	Salem Co-operative Association -----	6087, 6090, 6091, 6092, 6873, 6874,
-----	-----	6376
-----	V. T. Reid -----	6088, 6089, 6093, 6094, 6095, 6096,
-----	-----	6870, 6878
San Pierre -----	J. Eickheim -----	6472
Saratoga -----	Simon Snyder -----	6344, 6345
Scipio -----	W. F. McConnell -----	6783
-----	Chas. Stignon -----	6787
Scottsburg -----	M. Dinsmore -----	6310
-----	J. W. Allen -----	6313
-----	Geo. Higdon -----	6314
R. R. No. 2 -----	Roy Miner -----	6369
Sellersburg -----	R. McCurdy -----	6349
R. R. No. 2 -----	Louis Dryer -----	6856, 6857
Seymour -----	Ferdinand F. Buhner -----	6296, 6312, 6882, 6883
-----	Harrison Love -----	6324
-----	Charles Vogel -----	6319
Shelbyville -----	E. A. Chambers & Son -----	6384
Shirley -----	L. M. Shomber -----	6619
Shoals -----	Star Milling Co. -----	6297
-----	Henry Stevens -----	6298, 6308
Siberia -----	John Bomboloski -----	6333, 6680, 6687, 6688, 6689
Spencer -----	Fred Denkwalter -----	5998, 5999, 6000
St. Joe -----	A. L. Huntsman -----	6114
St. Meinrad -----	Jacob F. Ruxer -----	6123
Story -----	W. S. Noblett -----	6886
St. Paul -----	St. Paul Hardware Co. -----	6538, 6541, 6542
-----	W. W. Townsend -----	6032, 6033
Straughn -----	Albert Lamberson -----	6307, 6308
Sunman -----	Henry Kammeyer -----	6633, 6684
R. R. No. 2 -----	Geo. Hornberger -----	6080, 6081, 6082
-----	Jos. Kuebel & Co. -----	6112

Names and Addresses of Persons.—Continued.

Address.	Name.	Inspection Numbers B.
Tell City -----	James M. Jarboe ----- Launkin & Ulmer -----	6737, 6738 6275
Tennyson -----	Wm. P. Zint ----- Thomas J. Simpson -----	6202, 6777, 6778 6205, 6206, 6779, 6780, 6781
Terre Haute ----- R. R. No. 7	George C. Ingsby -----	5996
Terry -----	Adolph Graves & Sons -----	6739, 6740, 6741, 6743
Troy -----	Gayer Bros. ----- Eberhart & Schnell ----- Phil Lenigang ----- Lenigang & Hurst -----	6723, 6727, 6729, 6730, 6731 6732, 6733 6278, 6379, 6380, 6386, 6734, 6735 6736 6309
Union City ----- R. R.	The Farm Supply Co. ----- Pierce Elevator Co. ----- Jno. Lally ----- Glunt Bros. -----	6834 6835 6836 6335, 6337, 6838
Unlontown -----	A. J. Graves -----	6243
Valparaiso -----	Alex. Lippman -----	6463, 6464, 6465
Vevay -----	A. W. Long ----- George Gandin ----- Jerry Whitton ----- Douglas Hardware Co. -----	6363, 6364, 6365 6363 6377, 6379 6380, 6389
Vincennes -----	J. D. Boykin -----	6001, 6002, 6003, 6004
Wabash -----	H. Wolf & Son -----	5997
Walkerton -----	D. W. Place ----- Felix Horck -----	6157 6160, 6161, 6162
Walton ----- R. R. N. 16	M. F. Gremelspacher -----	6174
Washington -----	Hatfield & Palmer -----	6261, 6276
Waterloo ----- R. R. No. 2	J. C. Hodges ----- Olando Seery -----	6121, 6122 6123
Winamac -----	J. L. Roy -----	6157
Winchester -----	Kabel & Williams ----- Jno. Kabel ----- J. F. Michneis -----	6336, 6697 6703 6330

TABLE 8.—Brands Registered Under Act of March 11, 1901, for which the Acknowledged Certificate Required by Ruling of July 2, 1906, has been Submitted.

These are the legal standard for brands now on sale in this State.

No tag below 2715 can be legally used.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Alles. Rudy. New Albany, Ind.— The Butcher Boy.....	4066	2.6				22.5
American Agricultural Chemical Co., The, New York, N. Y.— A High Grade Garden and Vegetable Fertilizer.....	4279	1.6	5.0	8.0	2.0	
Bradley's Corn and Wheat Phosphate.....	2813	0.8	1.0	10.0		
Bradley's B. D. Sea Fowl Guano.....	2814	2.0	1.5	8.0		
Bradley's Alkaline Bone and Potash.....	2815		2.0	10.0		
Bradley's Dissolved Bone with Potash.....	2816	1.0	2.0	8.0		
Bradley's Niagara Phosphate.....	2817	0.8	1.0	7.0		
Bradley's Dissolved Bone Justice Brand.....	2818			12.0		
Bradley's Acid Phosphate.....	2820			10.0		
Bradley's Soluble Dissolved Bone.....	2821			14.0		
Bradley's Potato and Root Fertilizer.....	4277	0.8	3.0	8.0	2.0	
Cleveland Dryer, Horse Head Phosphate.....	2801			10.0		
Cleveland Dryer, Phospho Bone.....	2802	0.8	1.0	10.0		
Cleveland Dryer, XXX Superphosphate.....	2803			14.0		
Cleveland Dryer, Ohio Seed Maker with Potash.....	2804	1.6	2.0	8.0		
Cleveland Dryer, Potato and General Crop Fertilizer.....	4281	0.8	3.0	8.0	2.0	
Cumberland Dissolved Bone Phosphate.....	2822			14.0		
Cumberland Bone and Potash.....	2823		2.0	10.0		
Cumberland Guano.....	2824	1.0	2.0	8.0		
Cumberland Hawkeye Fertilizer.....	2825	0.8	1.0	7.0		
Cumberland Acid Phosphate.....	2826			10.0		
Cumberland Potato Fertilizer.....	4278	0.8	3.0	8.0	2.0	
Ground Bone.....	2870	2.4				20.0
High Grade Garden and Vegetable Fertilizer.....	4281	2.0	5.0	8.0	2.0	
Indiana Onion and Vegetable Fertilizer.....	4062	0.8	10.0	5.0	2.0	
New York State Special.....	4063	0.8	3.0	8.0	2.0	
M. & I. Special Manure.....	4280	2.4	6.0	8.0	2.0	
Quinnipiac Climax Phosphate.....	2793	1.0	2.0	8.0		
Quinnipiac Dissolved Bone and Potash.....	2794		2.0	10.0		
Quinnipiac Soluble Dissolved Bone.....	2795			14.0		
Quinnipiac Plain Superphosphate.....	2796			10.0		
Quinnipiac Special Corn and Wheat.....	2797	0.8	1.0	10.0		
Quinnipiac Ammoniated Dissolved Bone.....	2798	1.6	2.0	8.0		
Quinnipiac Mohawk Fertilizer.....	2799	0.8	1.0	7.0		
Reese, Challenge Phosphate.....	2879	0.8	2.0	8.0		
Reese, Half and Half.....	2880	0.8	1.0	7.0		
Reese, Elm Phosphate.....	2881			14.0		
Reese, Crown Phosphate and Potash.....	2882		2.0	11.0		
Standard Bone Meal.....	3000	1.2				25.0
Standard Bone and Potash.....	2871		2.0	10.0		
Standard "A" Brand.....	2872	0.8	1.0	7.0		
Standard Ammoniated Dissolved Bone.....	2873	1.6	2.0	8.0		
Standard Guano.....	2874	1.0	2.0	8.0		
Standard Dissolved Bone Phosphate.....	2883			14.0		
Standard Acid Phosphate.....	2884			10.0		
The A. A. C. Co., High Grade Bone and Potash.....	3335		5.0	10.0	2.0	
Williams & Clark, Dissolved Bone and Potash.....	2875		2.0	10.0		
Williams & Clark, Dissolved Bone Phosphate.....	2876			10.0		
Williams & Clark, Corn and Wheat Special.....	2877	0.8	1.0	10.0		
Williams & Clark, Prolific Crop Producer.....	2878	0.8	1.0	7.0		
Zell's Little Giant.....	2807	0.8	1.0	7.0		
Zell's Dissolved S. C. Phosphate.....	2808			12.0		
Zell's Dissolved Bone Phosphate.....	2809			14.0		
Zell's Electric Phosphate.....	2810		2.0	10.0		
Zell's Economizer.....	2811	0.8	2.0	8.0		
Zell's Ammoniated Bone Super Phosphate.....	2812	1.6	2.0	8.0		

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturer to contain not less than			
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.
American Agricultural Chemical Co., The, New York, N. Y.—					
Bowker Fertilizer Works, Cincinnati, Ohio.					
Bowker's High Grade Fertilizer.	4308	2.4	6.0	8.0	1.0
Bowker's Pure Ground Bone.	4309	9.4			
Bowker's Tobacco Grower.	4310	1.6	5.0	8.0	1.0
Bowker's Spring Special.	4311	0.8	3.0	8.0	1.0
Bowker's Potash Fertilizer.	4312		5.0	10.0	1.0
Bowker's Soluble Bone.	4313			14.0	1.0
Bowker's Sure Crop.	4314	0.8	2.0	9.0	1.0
Bowker's Fish Guano.	4315	0.8	3.0	8.0	1.0
Bowker's 10% Manure.	4316	0.8	10.0	5.0	1.0
Bowker's Pure Bone and Potash Mixture.	4317	0.8	3.0		
Bowker's Bone Meal.	4318	1.2			
Bowker's Dissolved Bone with Potash.	4319		9.0	10.0	1.0
Bowker's Harvest Bone.	4320	0.8	1.0	8.0	1.0
Bowker's Acid Phosphate.	4321			12.0	1.0
American Agricultural Chemical Co., The, Detroit Sales Department, Detroit, Mich.—					
Muriate of Potash.	4406		50.0		
German Kalnit.	4408		12.0		
Northwestern Horse Shoe Brand Garden City Superphosphate.	4419	2.0	1.5	8.0	2.0
Northwestern Horse Shoe Brand Challenge Corn Grower.	4420	2.0	1.5	8.0	2.0
Northwestern Horse Shoe Brand Corn and Wheat Grower.	4421	1.6	2.0	8.0	2.0
Northwestern Horse Shoe Brand Potash Manure.	4422	0.8	3.0	8.0	2.0
Northwestern Horse Shoe Brand Acidulated Bone and Potash.	4423	0.8	1.0	10.0	2.0
Northwestern Horse Shoe Brand Special Onion and Vegetable Manure.	4424	0.8	10.0	5.0	1.0
Northwestern Horse Shoe Brand High Grade Vegetable Fertilizer.	4425	1.6	5.0	8.0	2.0
Northwestern Horse Shoe Brand 10-5 Potash Manure.	4426		5.0	10.0	2.0
Northwestern Horse Shoe Brand Quick Acting Phosphate.	4427			10.0	2.0
Northwestern Horse Shoe Brand National Bone Dust.	4428	2.0	1.5	8.0	2.0
Northwestern Horse Shoe Brand Bone and Potash.	4429		2.0	10.0	2.0
Northwestern Horse Shoe Brand Square Deal Phosphate.	4430			14.0	2.0
Northwestern Horse Shoe Brand Animal Bone Manure.	4431	0.8	1.0	7.0	1.0
Northwestern Horse Shoe Brand Melon Grower.	4432	2.4	2.0	9.0	2.0
Northwestern Horse Shoe Brand Special Bone Meal.	4433	1.2			
Northwestern Horse Shoe Brand Pure Ground Bone.	4434	2.4			
Packers Boars Head Brand Corn and Wheat Grower.	4435	1.6	2.0	8.0	2.0
Packers Boars Head Brand Sure Growth Potash Manure.	4436	0.8	3.0	8.0	2.0
Packers Boars Head Brand Faultless Grain Grower.	4437	0.8	1.0	7.0	1.0
Packers Boars Head Brand Potash Phosphate Fertilizer.	4438		5.0	10.0	2.0
Packers Boars Head Brand High Grade Vegetable Fertilizer.	4439	1.6	5.0	8.0	2.0
Packers Boars Head Brand World of Good Superphosphate.	4440	2.0	1.5	8.0	2.0
Packers Boars Head Brand Ammoniated Bone and Potash.	4441	0.8	2.0	10.0	2.0
Packers Boars Head Brand Gilt Edge Phosphate.	4442			14.0	2.0
Packers Boars Head Brand Soluble Phosphate.	4443			10.0	2.0
Packers Boars Head Brand Special Bone Meal.	4444	1.2			
Packers Boars Head Brand Chicago Bone Meal.	4445	2.4			
American Agricultural Chemical Co., The, Great Eastern Fertilizer Branch, Rutland, Vt.—					
Great Eastern Dissolved Bone.	3450			14.0	2.0
Great Eastern English Wheat Grower.	3451	0.8	2.0	8.0	1.0
Great Eastern Vegetable, Vine and Tobacco.	3452	2.0	2.0	8.0	1.0
Great Eastern Soluble Bone and Potash.	3453		2.0	10.0	1.0
Great Eastern Columbus Special.	3454			10.0	2.0
Great Eastern Corn Fertilizer.	3455	1.6	2.0	8.0	1.0
Great Eastern Unammoniated Wheat Special.	3456			12.0	2.0
American Agricultural Chemical Co., The, Michigan Carbon Works, Detroit, Mich.—					
Homestead Bone Black Fertilizer.	4407	2.0	1.5	8.0	2.0
Homestead 10% Potash Fertilizer.	4408	0.8	10.0	5.0	1.0
Homestead High Grade Garden and Vegetable Fertilizer.	4409	1.6	5.0	8.0	2.0

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
American Agricultural Chemical Co., The, Michigan Carbon Works, Detroit, Mich.—						
A 1 Potash Fertilizer.....	4410	0.8	3.0	8.0	2.0	-----
Red Line Complete Manure.....	4411	0.8	1.0	7.0	1.0	-----
Red Line Phosphate with Potash.....	4412	-----	2.0	10.0	2.0	-----
Red Line Phosphate.....	4413	-----	-----	14.0	2.0	-----
Wolverine Phosphate.....	4414	-----	-----	10.0	2.0	-----
High Potash Phosphate.....	4415	-----	5.0	10.0	2.0	-----
Red Line Crop Grower.....	4416	1.6	2.0	8.0	2.0	-----
Homestead Special Bone Meal.....	4417	1.2	-----	-----	-----	25.0
Wolverine Pure Ground Bone.....	4418	2.4	-----	-----	-----	20.0
American Agricultural Chemical Co., New York, N. Y.—						
M. E. Wheeler & Company, Branch, Rutland, Vt.	-----	-----	-----	-----	-----	-----
Wisdom's Choice.....	3092	-----	-----	10.0	2.0	-----
Unammoniated Wheat Grower.....	3093	-----	-----	12.0	2.0	-----
Electrical Dissolved Bone.....	3094	-----	-----	14.0	2.0	-----
Wheat and Clover Fertilizer.....	3095	-----	2.0	10.0	1.0	-----
Royal Wheat Grower.....	3096	0.8	2.0	8.0	1.0	-----
Corn Fertilizer.....	3097	1.6	2.0	8.0	1.0	-----
Potato Manure.....	3098	2.0	3.0	8.0	1.0	-----
American Glue Company, Chicago, Ill.—						
Union Steamed Bone Meal.....	4199	0.8	-----	-----	-----	25.0
American Reduction Co., Pittsburg, Pa.—						
Common Sense.....	3137	1.6	0.5	5.0	0.5	-----
Pittsburg Guano.....	3138	0.8	0.5	7.0	0.5	-----
Iron City.....	3139	2.0	1.5	7.5	0.5	-----
Century Bone and Potash.....	3751	1.0	3.5	6.5	0.5	-----
Fine Ground Bone.....	3778	1.2	-----	-----	-----	18.0
Acid Phosphate.....	4196	-----	-----	10.0	0.5	-----
Vegetable Manure.....	4240	2.0	5.5	5.5	1.0	-----
Century Phosphate and Potash.....	4473	1.0	3.5	5.5	0.5	-----
Tankage.....	4479	2.3	0.7	-----	-----	2.2
Anderson Fertilizing Co., Anderson, Ind.—						
A Soft Bone Fertilizer.....	8317	4.0	-----	-----	-----	17.0
Armour Fertilizer Works, The, Chicago, Ill.—						
Raw Bone.....	2908	3.7	-----	-----	-----	22.0
Bone Meal.....	2904	2.4	-----	-----	-----	24.0
Fruit and Root Crop Special.....	2906	1.6	5.0	8.0	2.0	-----
All Soluble.....	2907	2.8	4.0	8.0	2.0	-----
Star Phosphate.....	2908	-----	-----	14.0	2.0	-----
Phosphate and Potash.....	2209	-----	2.0	10.0	2.0	-----
Grain Grower.....	2910	1.6	2.0	8.0	2.0	-----
Ammoniated Bone with Potash.....	2911	2.4	2.0	6.0	2.0	-----
Wheat, Corn and Oat Special.....	2938	0.8	1.0	7.0	2.0	-----
Bone, Blood and Potash.....	2053	4.1	7.0	8.0	2.0	-----
Acid Bone Meal.....	3020	1.6	-----	11.0	7.0	-----
German Kainit.....	3512	-----	12.5	-----	-----	-----
Armour's Steamed Bone.....	3331	1.6	-----	-----	-----	20.0
Lawn and Garden.....	3339	2.8	4.0	8.0	2.0	-----
Cereal Phosphate.....	3360	-----	-----	10.0	2.0	-----
Muriate of Potash.....	3477	-----	48.0	-----	-----	-----
Nitrate of Soda.....	3478	15.6	-----	-----	-----	-----
Sulphate of Potash.....	3479	-----	50.0	-----	-----	-----
Hoosier Corn Grower.....	3480	0.8	4.0	8.0	2.0	-----
High Grade Potato.....	3509	1.6	10.0	8.0	2.0	-----
Armour's Standard.....	3510	0.8	3.0	8.0	2.0	-----
Soluble Phosphate and Potash.....	3536	-----	4.0	10.0	-----	-----
Royal Brand.....	3709	0.4	2.5	8.0	-----	-----
Crop Grower.....	3710	1.2	2.0	8.0	-----	-----
Banner Brand.....	3720	-----	8.0	10.0	-----	-----

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Armour Fertilizer Works, The, Chicago, Ill.—						
Dried Blood	3791	13.2				
Potash Truckee	3833	0.8	8.0	8.0		
Bone and Potash Mixture	3838	1.8	3.0		30.0	
U. S. Phosphate	4057			12.0		
Tobacco Grower	4345	1.6	5.0	8.0	0.5	
Acidulated Bone with Potash	4453	0.8	5.0	11.0	0.5	
Atlas Fertilizer Company, Fort Wayne, Ind.—						
Atlas Raw Ground Bone	3797	4.0				2.0
Atlas 10% Acid Phosphate	3798			16.0	1.0	
Atlas Ideal Grain Grower	3799	1.6	2.0	8.0	1.0	
Atlas Crop Producer	3800	1.8	2.0	7.0	1.0	
Atlas Grain Grower	3822	1.2	2.0	8.0	1.0	
Atlas Superphosphate	3823	1.8	1.5	10.5	3.3	
Atlas Blood, Bone and Potash	3824	2.0	2.0	8.0	1.0	
Atlas Corn and Wheat Grower	3911	2.0	2.0	5.0	1.0	
Atlas Tobacco and Truck Fertilizer	4105	2.0	10.0	6.0	1.0	
Atlas High Grade Tobacco Special	4106	1.2	5.0	8.0	1.0	
Atlas Onion Grower	4107	1.5	8.0	8.0	1.0	
Atlas Onion Special	4137	2.0	5.0	6.0	1.0	
Barwell, John W., Waukegan, Ill.—						
Blatchford's Plant Grower and Land Renovator	3907	5.0	6.0	5.2	5.0	
Bash Fertilizer Co., Fort Wayne, Ind.—						
Bash's Corn and Wheat Grower	4073	2.0	2.0	5.0	1.0	
Bash's Ideal Grain Grower	4151	1.6	2.0	8.0	1.0	
Bash's Grain Grower	4152	1.2	2.0	8.0	1.0	
Bash's Odorless Lawn Fertilizer	4153	2.0	1.0	6.0	1.0	
Bash's 16 Per Cent. Phosphate	4154			16.0	1.0	
Bash's Wayne Raw Bone	4155	4.0				21.8
Bash's Monarch Plant Food	4156	4.0	7.0	6.0	1.0	
Bash's High Grade Tobacco Special	4157	1.2	5.0	8.0	1.0	
Bash's Potato and Garden Special	4158	2.2	10.0	8.0	1.0	
Bash's Onion, Tobacco and Truck Fertilizer	4159	2.0	10.0	6.0	1.0	
Bash's Onion Grower	4160	1.5	8.0	8.0	1.0	
Bash's Onion Special	4161	2.0	5.0	6.0	1.0	
Bash's Utility Phosphate	4162	1.8	1.5	10.5	1.0	
Bash's Blood Bone and Potash	4163	2.0	2.0	8.0	1.0	
Muriate of Potash	4227		49.0			
Bashumus Brand Tobacco Special	4499	1.2	5.0	8.0	1.0	
Bashumus Brand Blood Bone and Potash	4500	2.0	2.0	8.0	1.0	
Bashumus Brand Big Crop Producer	4501	1.6	2.0	8.0	1.0	
Bashumus Brand Corn Special	4502	1.2	4.0	8.0	1.0	
Bashumus Brand Grain Grower	4503	1.2	2.0	8.0	1.0	
Bashumus Brand Garden Special	4504	1.0	10.0	8.0	1.0	
Bashumus Brand Big Truck Grower	4505	1.0	8.0	8.0	1.0	
Bauer, Herman, Lanesville, Ind.—						
Herman Bauer Pure Bone Meal	4485	2.4				22.8
Herman Bauer Potato and Root Fertilizer	4486	0.8	4.0	8.0	1.0	
Herman Bauer Pure Bone Meal and Potash	4487	0.8	4.0			21.0
Herman Bauer Pure Raw Bone	4488	3.7				20.0
Herman Bauer Bone Black Grain Grower	4489	2.0	1.5	8.0	9.0	
Herman Bauer Corn and Wheat Grower	4470	0.4	2.0	10.0	1.0	
Bausback & Sons, Robert, Shelbyville, Ind.—						
Soft Bone	3007	8.5				14.0
Benz, Michael, Batesville, Ind.—						
M. Benz Fertilizer	4239	2.0				18.0
Bingham & Winslow, Royal Center, Ind.—						
Muriate of Potash	4005		50.0			

Brands Registered Under Act of March 11, 1901.—Continued.

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		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Blood & Bone Fertilizer Co., St. Louis, Mo.—						
"Steer Head" Truck Grower.....	4490	2.0	8.0	8.0	8.0	-----
"Steer Head" Brand Special Wheat Grower.....	4491	1.0	3.0	10.0	8.0	-----
"Steer Head" Brand Corn Grower.....	4492	1.6	2.0	8.0	8.0	-----
"Steer Head" Brand Soluble Bone Phosphate.....	4493	-----	-----	14.0	2.0	-----
"Steer Head" Brand Oat Grower.....	4494	1.0	1.0	7.0	2.0	-----
"Steer Head" Brand Soluble Phosphate and Potash.....	4495	-----	5.0	8.0	1.0	-----
"Steer Head" Brand Wheat Grower.....	4496	1.0	1.0	7.0	2.0	-----
"Steer Head" Brand Bone Meal.....	4497	8.0	-----	-----	-----	18.0
Blome & Co., Paul, Chicago, Ill.—						
Superior Plant Food.....	4006	8.0	0.5	12.0	5.0	-----
Bonday, Jr. & Co., James, Baltimore, Md.—						
Old Reliable Brand German Kainit.....	4085	-----	12.0	-----	-----	-----
No. 1 Syndikat Sulphate of Potash.....	4086	-----	47.0	-----	-----	-----
No. 1 Syndikat Muriate of Potash.....	4087	-----	48.0	-----	-----	-----
Brookville Fertilizer Works, Brookville, Ind.—						
Half Bone and Half Tankage.....	3789	0.4	-----	12.0	2.0	-----
Buffalo Fertilizer Co., Buffalo, N. Y.—						
General Crop.....	3784	-----	3.0	9.0	1.0	-----
"Soluble Bone".....	3785	-----	-----	14.0	1.0	-----
Fish Guano.....	3845	0.8	2.0	9.0	1.0	-----
Farmers Choice.....	3846	0.8	5.0	8.0	1.0	-----
Ideal Wheat and Corn.....	3847	1.6	5.0	9.0	1.0	-----
Ammoniated Bone Black.....	3848	1.2	2.5	8.0	1.0	-----
Celery and Potato Special.....	3849	1.6	10.0	8.0	1.0	-----
Kainit.....	3855	-----	12.0	-----	-----	-----
Buffalo Bone Meal.....	4351	3.5	-----	-----	-----	22.0
Buhler, Henry, New Albany, Ind.—						
Gold Medal Corn and Wheat Grower.....	4306	2.5	1.5	-----	-----	10.0
Buhner, Ferdinand F., Seymour, Ind.—						
Buhner's All Crop Grower.....	3316	2.0	1.2	8.0	2.0	-----
Ammoniated Ground Bone.....	3327	2.0	-----	-----	-----	17.0
Buhner's Dissolved Bone.....	3486	-----	-----	14.0	-----	-----
Farmers Favorite.....	3736	0.8	4.2	8.5	2.0	-----
Grain Producer.....	4123	0.4	3.0	7.0	2.0	-----
Raw Ground Bone.....	4171	3.2	-----	-----	-----	20.0
Muriate of Potash.....	4464	-----	48.0	-----	-----	-----
Champion Fertilizer Co., The, Cincinnati, Ohio.—						
Western Reserve Dissolved Bone.....	3159	0.8	2.0	10.0	1.0	-----
Chicago Fertilizer Works, Not Inc., Chicago, Ill.—						
Kainit.....	4606	-----	12.4	-----	-----	-----
"Old Abe" High Grade Pure Bone Meal.....	4507	2.4	-----	-----	-----	23.0
"Old Abe" Gardeners' Favorite.....	4508	2.4	7.0	8.0	1.0	-----
"Old Abe" Universal Wheat, Corn and Oats.....	4509	0.8	1.0	8.0	1.0	-----
"Old Abe" Premium Corn, Potato and Onion.....	4510	1.6	7.0	8.0	1.0	-----
"Old Abe" Animal Bone and Potash.....	4511	1.6	2.0	8.0	2.0	-----
"Old Abe" Truckers' Choice.....	4512	0.8	4.0	8.0	1.0	-----
"Old Abe" Illinois Corn Special.....	4513	0.8	7.0	8.0	1.0	-----
Cincinnati Phosphate Co., The, Cincinnati, Ohio.—						
Capital City Ground Bone.....	2886	2.8	-----	-----	-----	20.0
Capitol Tobacco Food.....	3224	0.8	4.0	8.0	1.0	-----
Capitol Muriate Potash.....	3222	-----	50.0	-----	-----	-----
Capitol Nitrate of Soda.....	3506	12.5	-----	-----	-----	-----
Tankage.....	3625	8.3	-----	-----	-----	-----
Patrons High Grade Phosphate.....	3623	-----	-----	16.0	1.0	-----
Bone and Phosphate Mixture, Wheat Special.....	3700	1.6	1.0	10.0	6.0	-----

Brands Registered Under Act of March 11, 1901.—Continued.

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Cincinnati Phosphate Co., The, Cincinnati, Ohio.—						
Truck and Tobacco Fertilizer.....	3818	1.6	6.0	6.0	1.0	-----
"Bonus" A Phosphate with Humus.....	3908	0.4	-----	12.0	1.0	-----
Capitol High Grade Guano.....	3904	1.2	2.5	8.0	1.0	-----
Cereals.....	3984	0.8	1.0	7.0	1.0	-----
A Wheat Grower.....	4076	-----	-----	12.0	1.0	-----
Acid Phosphate.....	4141	-----	-----	14.0	1.0	-----
Dissolved Phosphate and Potash.....	4899	-----	4.0	10.0	1.0	-----
Alkaline Phosphate.....	4900	-----	2.0	10.0	1.0	-----
A Grain and Grass Grower.....	4901	0.8	2.0	8.0	1.0	-----
Continental Fertilizer Co., Louisville, Ky.—						
Bear Phosphate.....	3272	-----	-----	12.0	1.0	-----
Bear High Grade Potato and Tobacco Grower.....	3283	1.6	4.0	7.0	1.0	-----
Bear Raw Bone.....	3299	2.4	-----	-----	-----	20.0
Bear Bone Meal.....	3300	0.8	-----	-----	-----	20.0
Bear Special Wheat Grower.....	3328	0.8	1.0	7.0	1.0	-----
Bear Indiana Potash Mixture.....	3336	-----	2.0	10.0	1.0	-----
Bear Indiana Dissolved Bone.....	3337	-----	-----	14.0	1.0	-----
Bear Indiana Special Corn Grower.....	3496	0.8	1.0	7.0	1.0	-----
Bear Indiana Beef, Blood and Bone.....	3437	1.6	2.0	10.0	1.0	-----
Bear Indiana Slaughter House Bone.....	3760	1.6	2.0	8.0	1.0	-----
Bear Grain Grower.....	4089	0.4	4.0	8.0	1.0	-----
Bear Indiana Bone and Potash.....	4067	0.4	1.0	11.0	1.0	-----
Bear Potash Special.....	4169	0.8	7.0	7.0	0.5	-----
Critchfield Co., The, Cincinnati, Ohio.—						
Wheat and Grass Phosphate.....	3647	-----	2.0	10.0	1.0	-----
Fish Guano.....	3648	1.2	2.0	9.0	1.0	-----
Standard Phosphate.....	3649	-----	-----	14.0	1.0	-----
Complete Plant Food.....	3753	0.8	1.0	10.0	1.0	-----
Bone and Phosphate Mixture.....	3768	1.6	1.0	10.0	6.0	-----
Darling & Company, Chicago, Ill.—						
Darlings Ground Raw Bone.....	2643	3.3	-----	-----	-----	21.0
Darlings Two and Twenty Bone.....	2644	1.6	-----	-----	-----	18.0
Darlings Chicago Brand.....	2647	1.6	2.0	8.0	-----	-----
Darlings Vegetable and Lawn Fertilizer.....	2648	3.3	7.0	8.0	-----	-----
Darlings Farmer's Favorite Brand.....	2649	2.4	4.0	8.0	-----	-----
Darlings High Grade Acid Phosphate.....	2644	-----	-----	14.0	-----	-----
Sure Winner Brand.....	2650	0.8	3.0	8.0	-----	-----
Pure Ground Bone.....	2651	2.4	-----	-----	-----	23.0
Sulphate of Potash.....	2654	-----	45.0	-----	-----	-----
Darlings General Crop Brand.....	2659	0.8	6.0	8.0	-----	-----
Pure Bone and Potash.....	4044	2.1	6.0	-----	-----	20.1
Darling's Phosphate and Potash Brand.....	4176	-----	2.0	10.0	-----	-----
Darling's Big Potash Brand.....	4177	1.2	10.0	8.0	-----	-----
Darling's Kalnit.....	4183	-----	12.0	-----	-----	-----
Darling's Nitrate of Soda.....	4184	14.8	-----	-----	-----	-----
Darling's Ten-Five Brand.....	4243	-----	5.0	10.0	-----	-----
Darling's Indiana Peat Soil Special.....	4244	0.8	10.0	7.0	-----	-----
Muriate of Potash.....	4514	-----	50.0	-----	-----	-----
D. & K. Fertilizer Co., Indianapolis, Ind.—						
D. and K. Bone Phosphate.....	3080	-----	1.1	10.0	1.0	-----
Dissolved Bone with Potash.....	3363	0.8	1.1	7.0	1.0	-----
Pure Ground Bone.....	3368	1.6	-----	-----	-----	20.0
Quick Acting Corn Grower.....	3402	0.8	1.5	9.0	0.5	-----
D. and K. Potato Grower.....	3495	0.4	2.0	6.0	1.0	-----
D. and K. Wheat Grower.....	3753	1.0	1.5	8.0	1.2	-----
D. and K. Special Mixture.....	3781	1.9	4.5	8.0	1.0	-----
D. and K. Spring Special.....	3909	0.8	3.0	8.0	0.5	-----
Muriate of Potash.....	3910	-----	45.0	-----	-----	-----
German Kalnit.....	3997	-----	12.0	-----	-----	-----
D. and K. Truck Special.....	4136	1.5	5.0	8.0	0.5	-----
D. and K. Phosphate and Potash.....	4210	-----	2.0	10.0	-----	-----

Brands Registered Under Act of March 11, 1901.—Continued.

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Dryfus Packing & Provision Company, LaFayette, Ind.—						
Star Brand	2922	4.5	-----	-----	-----	16.0
Dryfus Lawn Fertilizer	4033	2.0	-----	-----	-----	20.0
Empire Carbon Works, National Stock Yards, Ill.—						
Empire Raw Bone Meal	2986	3.2	-----	-----	-----	22.0
Empire Complete Manure	4118	0.8	1.0	7.0	1.5	-----
Empire Wheat and Clover Fertilizer	4119	0.8	2.0	8.0	2.0	-----
Empire Bone Black Fertilizer	4120	2.0	1.5	8.0	2.0	-----
Empire Special Bone Meal	4121	1.2	-----	-----	-----	26.0
Empire Phosphate with Potash	4122	-----	2.0	10.0	2.0	-----
Empire Guano Co., The, Nashville, Tenn.—						
Empire High Grade Acid Phosphate	3307	-----	-----	14.0	2.0	-----
Empire Dissolved Bone	3308	-----	-----	10.0	2.0	-----
Empire Bone and Potash	3309	-----	2.0	10.0	2.0	-----
Empire Wheat and Corn Grower	3310	0.8	1.0	10.0	1.0	-----
Empire Ground Bone	3440	2.4	-----	-----	-----	17.0
Empire Guano	3441	1.6	2.0	8.0	2.0	-----
Empire Potash Mixture	3507	-----	4.0	10.0	2.0	-----
Empire Climax Acid Phosphate	3514	-----	-----	16.0	1.0	-----
Favorite Crop Grower	4253	0.8	1.0	7.0	1.0	-----
Blood, Bone and Potash	4254	1.6	2.0	8.0	1.0	-----
Truck Grower	4255	1.6	2.0	6.0	1.0	-----
Red Banner Special	4256	0.8	2.0	8.0	1.0	-----
Evansville Packing Co., The, Evansville, Ind.—						
Packing House Tankage	4218	5.0	-----	-----	-----	16.0
Pure Raw Bone	4219	2.5	-----	-----	-----	21.5
Bone and Potash	4220	0.8	1.0	7.0	1.0	-----
Wheat and Corn Grower	4221	1.0	2.0	8.0	1.0	-----
Potato and Tobacco Grower	4222	1.6	5.0	8.0	1.0	-----
Half and Half	4223	2.5	2.0	6.0	5.0	-----
Complete Fertilizer	4224	1.6	2.0	8.0	1.0	-----
Ewing, Geo. M., Greensburg, Ind.—						
Ewing's Phosphate and Potash	3324	-----	2.0	10.0	-----	-----
Ewing's Best Phosphate and Potash	3325	-----	2.0	12.0	-----	-----
Ewing's Acid Phosphate	3326	-----	-----	10.0	-----	-----
Ewing's Potash Mixture	3498	-----	4.0	10.0	2.0	-----
Ewing's Complete Fertilizer	3519	0.8	1.0	7.0	-----	-----
Ewing's 14% Acid Phosphate	3723	-----	-----	14.0	-----	-----
Farmers Fertilizer Co., Indianapolis, Ind.—						
Farmers Eureka Phosphate	3198	-----	-----	10.0	-----	-----
Farmers Wheat and Oats Special	3199	-----	-----	14.0	-----	-----
Farmers Phosphate and Potash	3200	-----	2.0	10.0	-----	-----
Farmers Half and Half	3204	2.0	-----	8.5	6.0	-----
Electric Guano	3315	-----	4.0	10.0	-----	-----
Farmers Harvest King	3393	1.1	5.0	8.5	2.5	-----
Our Universal Phosphate	3555	0.8	1.0	7.0	1.0	-----
Corn and Wheat Grower	3556	0.8	2.0	8.0	1.0	-----
Our German Phosphate	3557	0.8	3.0	8.0	1.0	-----
Muriate of Potash	3716	-----	50.0	-----	-----	-----
Pure Bone	3806	1.6	-----	-----	-----	22.0
High Grade Potash Manure	3807	0.4	8.0	8.0	1.0	-----
Farmers Ground Rock Phosphate Co., Mt. Pleasant Tenn.—						
Farmers Ground Phosphate XX Brand	4225	-----	-----	-----	-----	27.5
Farmers Phosphate Co., Urbana, Ill.—						
Rock Phosphate	4243	-----	-----	-----	-----	27.0

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Federal Chemical Company, Louisville, Ky.—						
Daybreak Potash Mixture.....	8917	—	4.0	10.0	—	—
Daybreak Phosphate and Potash.....	8918	—	2.0	12.0	—	—
Daybreak Raw Bone.....	8921	3.7	—	—	—	24.0
Daybreak Bone and Potash.....	8923	—	2.0	10.0	—	—
Daybreak Standard Phosphate.....	8923	—	—	12.0	—	—
Daybreak Star Phosphate.....	8924	—	—	10.0	—	—
Daybreak Royal Phosphate.....	8925	—	—	14.0	—	—
Daybreak Standard Corn and Wheat Grower.....	4082	1.6	2.0	8.0	2.0	—
Daybreak Potato and Tobacco Grower.....	4083	1.6	7.5	8.0	2.0	—
Daybreak Fine Raw Bone.....	4088	2.4	—	—	—	24.0
Daybreak Vegetable Grower.....	4101	1.6	5.0	8.0	2.0	—
Daybreak Corn and Clover Grower.....	4114	0.8	1.0	9.0	1.0	—
Daybreak Special Fruit Grower.....	4117	1.2	6.0	8.0	—	—
Muriate of Potash.....	4125	—	—	48.0	—	—
"A" Daybreak Complete Fertilizer.....	4142	1.6	2.0	10.0	—	—
"A" Daybreak Wheat and Corn Special.....	4143	0.4	1.0	11.0	—	—
"A" Daybreak Favorite.....	4144	0.8	3.0	11.0	—	—
"A" Daybreak Crop Grower.....	4145	0.8	3.0	10.0	—	—
"A" Daybreak Grain Grower.....	4146	0.4	1.5	9.0	—	—
"A" Daybreak Special Tobacco Grower.....	4147	1.2	6.0	8.0	—	—
"A" Daybreak Standard Tobacco Grower.....	4148	0.8	4.0	8.0	—	—
"A" Daybreak Harvest Bone.....	4149	2.4	—	10.0	—	—
Daybreak Standard Crop and Tobacco Grower.....	4260	0.8	4.0	8.0	—	—
Daybreak Special Manure.....	4271	0.8	2.0	10.0	—	—
Daybreak Special Tomato Grower.....	4306	1.2	6.0	8.0	—	—
Kainit.....	4498	—	—	12.0	—	—
Fessenden, F. L., Cincinnati, Ohio.—						
Manure Salt.....	4015	—	20.0	—	—	—
Sulphate of Potash.....	4016	—	50.0	—	—	—
Nitrate of Soda.....	4017	13.5	—	—	—	—
Muriate of Potash.....	4018	—	50.0	—	—	—
Tankage.....	4019	8.3	—	1.0	1.0	—
Fox Chemical Co., Louisville, Ky.—						
Fox Grain Grower.....	2728	0.8	1.0	9.0	—	—
Fox Wheat and Corn Grower.....	2729	1.6	2.0	10.0	—	—
Fox Bone and Blood.....	2731	1.6	—	9.0	—	—
Fox Acid Phosphate.....	2732	—	—	14.0	—	—
A. A. Acid Phosphate.....	2733	—	—	10.0	—	—
Fox Bone and Potash.....	2734	—	1.0	9.0	—	—
Fox Grain Special.....	3111	0.4	1.5	9.0	1.0	—
Fox High Grade Acid Phosphate.....	3607	—	—	16.0	—	—
Fox Bone Phosphate.....	3609	—	2.0	12.0	—	—
Fox Vegetable Grower.....	3651	1.6	5.0	8.0	—	—
"A" Fox Formula.....	3675	0.8	3.0	11.0	—	—
Fox Raw Bone.....	3684	3.2	—	—	—	22
Fox Standard Acid Phosphate.....	3685	—	—	12.0	—	—
Fox Bone Phosphate and Potash.....	3686	—	4.0	10.0	—	—
Muriate of Potash.....	3687	—	50.0	—	—	—
Fox Wheat and Grain Special.....	3689	0.8	1.0	12.0	—	—
Bone, Blood and Potash.....	3812	0.4	1.0	11.0	2.0	—
Fox Tobacco Grower.....	4002	1.6	3.0	8.0	2.0	—
Fox Special Tobacco Grower.....	4003	1.6	5.0	8.0	2.0	—
Fox Early Harvest.....	4068	0.8	2.0	10.0	1.0	—
Fox Potato and Tobacco Grower.....	4050	1.6	7.5	8.0	2.0	—
Fox Crop Grower.....	4080	0.8	4.0	8.0	1.0	—
Fox Ground Raw Bone.....	4089	2.4	—	—	—	24
Fox Ammoniated Bone.....	4115	2.4	—	10.0	2.0	—
Fox Wheat and Corn Manure.....	4132	1.6	2.0	8.0	—	—
Fox Crop and Tobacco Grower.....	4250	0.8	4.0	8.0	—	—
Fox Special Tomato Grower.....	4307	1.2	6.0	8.0	—	—

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Globe Fertilizer Co., Louisville, Ky.—						
Acorn Acid Phosphate.....	2719			10.0		
Globe Acid Phosphate.....	2720			14.0		
Globe Bone Dust.....	2723	0.8	1.0	9.0		
Globe Wheat Grower.....	2726	1.6	2.0	10.0		
Eagle Corn and Wheat Grower.....	2727	1.6	2.0	8.0		
Globe Grain Grower.....	3109	0.4	1.5	9.0	1.0	
Golden Harvest Bone Meal.....	3173	2.4		10.0	1.0	
Globe High Grade Acid Phosphate.....	3608			16.0		
Globe Raw Bone.....	3648	3.7				23.0
Globe Potato Grower.....	3644	3.2	4.0	8.0		
Globe Progress Corn and Wheat Grower.....	3670	0.8	2.0	10.0		
"A" Braden Formula.....	3674	0.8	3.0	11.0		
Standard Acid Phosphate.....	3676			19.0		
Potash Compound.....	3677		2.0	12.0		
Potash Special.....	3678		2.0	10.0		
Globe Bone Phosphate and Potash.....	3679		4.0	10.0		
Wheat and Grain Special.....	3680	0.8	1.0	12.0		
Big Four Tobacco Grower.....	3681	1.6	2.0	8.0		
Globe Soluble Vegetable Manure.....	3682	1.6	5.0	8.0		
Globe Special Tobacco Grower.....	3683	2.4	10.0	8.0		
Bone and Potash.....	3810	0.4	1.0	11.0	2.0	
Kentucky Standard Tobacco Grower.....	3811	1.6	5.0	8.0	2.0	
Tankage.....	3880	8.2				11.0
Muriate of Potash.....	3881		60.0			
Globe Vegetable Grower.....	4004	0.8	8.0	8.0	2.0	
Globe Potato and Tobacco Grower.....	4064	1.6	7.5	8.0	2.0	
Globe Vegetable Manure.....	4065	0.4	8.0	8.0	2.0	
Acorn Raw Bone.....	4090	2.4				24.0
Globe Potash Mixture.....	4138		10.0	8.0		
"A" Globe Universal Crop Grower.....	4165	0.8	4.0	8.0		
"A" Big Four Phosphate.....	4166		1.0	9.0		
Globe Grain and Grass Grower.....	4269	0.4	1.0	11.0		
Globe Universal Crop and Tobacco Grower.....	4270	0.8	4.0	8.0		
Groves Company, The, Cincinnati, Ohio.—						
Groves Pure Ground Bone.....	4261	2.5				20.0
Groves Pure Raw Bone.....	4262	3.2				22.0
Groves Favorite Fertilizer.....	4263	1.6	2.0	8.0	2.0	
Groves Special Truck Manure.....	4264	1.6	8.0	8.0	2.0	
Groves Potash Mixture.....	4265		5.0	10.0	2.0	
Groves Complete Grain Grower.....	4266	0.8	2.0	8.0	2.0	
Groves Wheat and Oats.....	4267		2.0	10.0	2.0	
Groves Monarch Brand.....	4268			14.0	2.0	
Groves 10% Potash Fertilizer.....	4285	0.8	10.0	5.0	2.0	
Eedenbaugh's Wheat Grower.....	4302	0.8	2.0	8.0	2.0	
Eedenbaugh's Spring Special.....	4303	0.8	3.0	8.0	2.0	
Eedenbaugh's Acid Phosphate.....	4304			14.0	2.0	
Groves 7—11.....	4450		11.0	7.0	2.0	
Muriate of Potash.....	4451		50.0			
Groves Special Onion and Truck Manure.....	4452	2.4	10.0	9.0	2.0	
Groves Spring Special.....	4473	0.8	3.0	8.0	2.0	
Hess & Bro., S. M., Philadelphia, Pa.—						
Keystone Bone Phosphate.....	2991	0.8	1.0	8.0	2.0	
Special Compound.....	2992	0.8	4.0	8.0	1.0	
Wheat and Grass Manure.....	2993	0.8	2.0	8.0	1.0	
Soluble Bone Phosphate.....	2994			14.0	2.0	
Ammoniated Bone Superphosphate.....	3170	1.6	2.0	8.0	1.0	
Special Corn Manure.....	3278	0.8	2.0	8.0	1.0	
Potato and Truck Manure.....	3279	2.5	6.0	8.0	1.0	
Soluble Bone and Potash.....	3291		2.0	10.0	1.0	
Acid Phosphate.....	3635			12.0	2.0	
Tobacco Manure.....	3631	2.4	6.0	8.0	2.0	
Hess' Ground Bone.....	3884	2.4				20.0
Muriate of Potash.....	4242		50.0			

Brands Registered Under Act of March 11, 1901.—Continued.

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Hirsh, Stein & Co., Chicago, Ill.—						
Calumet Brand Special Pure Bone Meal.....	4180	0.8	-----	-----	-----	2
Calumet Brand Pure Bone Meal.....	4181	2.4	-----	-----	-----	2
Calumet Brand Pure Raw Bone Meal.....	4201	3.7	-----	-----	-----	2
Calumet Brand Special Pure Bone Meal and Potash.....	4202	0.8	4.0	-----	-----	2
"Calumet Brand" Grain Grower.....	4203	1.6	2.0	8.0	1.0	-----
Calumet Brand Wheat, Corn and Oats Special.....	4204	0.8	4.0	8.0	1.0	-----
Calumet Brand Dissolved Pure Bone and Potash.....	4205	0.8	1.0	10.0	1.0	-----
Calumet Brand Dissolved Pure Bone Phosphate.....	4207	0.8	-----	18.0	2.0	-----
Calumet Brand Ammoniated Dissolved Pure Bone and Potash.....	4208	1.6	2.0	10.0	1.0	-----
Calumet Brand Special 10% Potash Manure.....	4222	0.8	10.0	5.0	1.0	-----
Calumet Brand High Grade Bone Phosphate and Potash.....	4223	0.4	5.0	10.0	1.0	-----
Calumet Brand Universal Crop Grower.....	4224	0.8	1.0	7.0	1.0	-----
Calumet Brand Special Potato, Tobacco and Onion Grower.....	4225	1.6	10.0	8.0	1.0	-----
Calumet Brand Potato, Tobacco and Onion Grower.....	4226	1.6	5.0	8.0	1.0	-----
Calumet Brand Bone Phosphate and Potash.....	4227	0.4	2.0	10.0	1.0	-----
Sulphate of Potash.....	4475	-----	50.0	-----	-----	-----
Kainit.....	4476	-----	12.0	-----	-----	-----
Muriate of Potash.....	4477	-----	50.0	-----	-----	-----
Calumet Brand Fruit and Truck Grower.....	4481	4.1	7.0	8.0	1.0	-----
Calumet Brand High Grade Garden and Vegetable Grower.....	4482	2.0	6.0	8.0	1.0	-----
Hopkins Fertilizer Co., New Albany, Ind.—						
Muriate of Potash.....	3230	-----	50.0	-----	-----	-----
Hopkins "Old Times Bone Meal".....	3422	3.0	-----	-----	-----	1
Hopkins "Old Times Pure Raw Bone".....	3430	3.5	-----	-----	-----	2
Hopkins "Old Times Phosphate".....	3432	-----	-----	13.0	-----	-----
Hopkins "Old Times" Packing House Tankage.....	3790	2.0	-----	-----	-----	2
Hopkins "Old Times" Tankage, Bone and Potash.....	3819	0.5	2.0	7.0	-----	-----
Hopkins "Old Times" Blood and Potash.....	3827	0.5	4.0	7.0	-----	-----
Blood and Meat Tankage.....	3820	5.0	-----	-----	-----	1
Hopkins Old Times Fine Ground Bone Meal.....	3877	2.5	-----	-----	-----	2
Hopkins Special.....	3935	1.6	2.0	8.0	-----	-----
Hopkins Complete Fertilizer.....	4089	3.5	0.0	7.0	1.5	-----
Hopkins Special Crop Grower.....	4070	1.0	6.0	8.0	-----	-----
Hopkins Wheat and Corn Grower.....	4071	1.0	2.0	8.0	-----	-----
Hopkins Half and Half.....	4072	2.0	2.0	6.0	6.0	-----
Nitrate of Soda.....	4515	15.0	-----	-----	-----	-----
Hubbell & Sons Fertilizer Co., L. W., Francesville, Ind.—						
Hubbell's Corn and Clover Grower.....	3627	-----	4.0	10.0	-----	-----
Hubbell's Special Corn Grower.....	3628	-----	6.0	8.0	-----	-----
Kainit.....	3641	-----	12.0	-----	-----	-----
Hubbell's Grain King.....	3604	0.8	7.0	6.0	-----	-----
"Hubbell's Hoosier High Grade Potash and Tankage".....	3743	0.4	10.0	-----	-----	-----
"Hubbell's Hercules 10% Potash".....	3744	-----	10.0	5.0	-----	-----
Hubbell's Acidulated Bone Meal.....	3843	1.6	-----	11.0	7.0	-----
Hubbell's Kall Muriate of Potash.....	4025	-----	48.0	-----	-----	-----
Sulphate of Potash.....	4026	-----	50.0	-----	-----	-----
Ideal Phosphate.....	4341	-----	-----	14.0	0.5	-----
Hubbell's Indiana Highland.....	4342	1.6	2.0	8.0	0.5	-----
Indianapolis Fertilizer Co., Indianapolis, Ind.—						
Soluble Bone.....	3226	-----	-----	12.0	0.8	-----
Raw Bone.....	3226	1.9	-----	-----	-----	1
Corn and Wheat Special.....	3294	0.8	1.5	8.0	0.7	-----
Bone and Blood with Potash.....	3295	1.1	0.8	7.0	0.7	-----
Special Wheat.....	3213	0.9	1.8	8.0	0.8	-----
German Kainit.....	3298	-----	-----	12.0	-----	-----
Spring Special.....	4365	0.8	3.0	7.5	0.5	-----
Indianapolis Rendering Co., Indianapolis, Ind.—						
Half and Half.....	3269	2.0	-----	8.0	6.0	-----
Phosphate and Potash.....	3263	-----	2.0	10.0	-----	-----
Superphosphate.....	3264	-----	-----	14.0	-----	-----

Brands Registered Under Act of March 11, 1901.—Continued.

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Manapolis Rendering Co., Indianapolis, Ind.—						
Bacon Phosphate	3366			10.0		
Potash Special	3361		4.0	10.0		
Our Grain Grower	3561	0.8	1.0	7.0	1.0	
Corn and Wheat Grower	3563	0.8	3.0	8.0	1.0	
Our Bone and Potash	3563	0.8	3.0	8.0	1.0	
Runner Bone Meal	3308	1.6				22.0
Potato and Truck Grower	3395	0.4	8.0	8.0	1.0	
Miana Tanking Co., Muncie, Ind.—						
Ground Bone	3393	2.4				30.0
I. T. C. Fertilizer Vegetable Compound	4172	3.2	2.5	8.0	2.0	
I. T. C. Fertilizer Corn and Oats Grower	4173	1.6	1.0	8.0	2.0	
I. T. C. Fine Raw Bone	4238	3.2				31.0
I. T. C. Wheat and Clover Grower	4233	1.6	1.0	8.0	1.5	
Wick Chemical Co., The, Cincinnati, Ohio.—						
Pure Ground Bone	2913	2.4				30.0
Fish and Potash, Potato and Tobacco Food	2914	0.8	4.0	8.0	1.0	
O. K. Fertilizer	2915	0.4	0.5	5.0	1.0	
Dissolved Bone Black Wheat Special	2916			15.0	1.0	
Square Brand Phosphate and Potash	3458		2.0	10.0	1.0	
Indian Brand Ohio Valley Phosphate	3550	1.6	3.0	8.0	1.0	
Perfection Tomato Grower	3540	0.8	5.0	8.0	1.0	
Raw Bone and Guano Mixture	3506	1.6	1.0	10.0	6.0	
Norris Steamed Bone Meal	3718	2.5				20.0
Norris Soluble Bone Phosphate	3719			14.0	1.0	
Norris Bone and Potash	3720		2.0	10.0	1.0	
Norris High Grade Bone and Potash	3721		4.0	10.0	1.0	
Norris Electric Wheat Maker	3722		2.5	12.0	1.0	
Norris Half-and-Half	3723	1.6	1.0	10.0	6.0	
Norris Special Fish Guano	3724	1.0	2.0	8.0	1.0	
Onion and Truck Grower	3816	1.6	5.0	6.0	1.0	
"A" Dissolved Bone and Potash	3896		4.0	10.0	1.0	
Little Giant Guano	3899	0.8	1.0	7.0	1.0	
Black Soil Special	3850		10.0	6.0	1.0	
Norris Fish Guano	4080	0.8	1.0	7.0	1.0	
"A. C. O. D. Phosphate"	4076			12.0	1.0	
Acid Phosphate	4140			14.0	1.0	
Fish and Potash Truck Manure	4175	3.3	7.0	8.0	1.0	
Lake Erie Guano with Phosphate and Potash	4287	1.2	2.5	8.0	1.0	
No. One Guano with Phosphate and Potash	4288	0.8	2.0	8.0	1.0	
Fish, Phosphate and Potash Tobacco and Potato Food	4289	0.8	4.0	8.0	1.9	
Super Phosphate and Potash	4290		4.0	10.0	1.0	
Mrs. J. B., Louisville, Ky.—						
Wheat Bromo	3876	1.5	0.2			4.0
Mrs. Robin, Nashville, Tenn.—						
Ground Phosphate Rock	3551					28.0
Robin Jones Acid Phosphate	4489			14.0		
Mrs. Fertilizing Co., The, Louisville, Ky.—						
Jones Corn and Wheat Grower	3565	0.8	1.0	7.0	1.0	
Jones Tobacco and Potato Grower	3566	1.6	4.0	7.0	1.0	
Indiana Jones Reliable	3567	0.8	1.5	8.0	1.0	
Jones Phosphate	3568			12.0	1.0	
Jones Bone Meal	3569	0.8				20.0
Jones Raw Bone	3570	2.4				30.0
Jones Indiana Slaughter House Bone	3759	1.6	2.0	8.0	1.0	
Jones Grain Grower	4041	0.4	4.0	8.0	1.0	
Jones Indiana Bone and Potash	4069	0.4	1.0	11.0	1.0	
Jones Potash Special	4170	0.8	7.0	7.0	0.5	
Jones Potash Mixture	4236		2.0	10.0	1.0	
Jones High Grade Dissolved Bone	4237			14.0	1.0	
Jones Miami Valley Phosphate	4238	1.6	2.0	10.0	2.0	

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Kalamazoo Rendering & Fertilizer Co., Kalamazoo, Mich.— Kazoo	4187	3.0	4.5			12.
Kaufman Fertilizer Co., The, Cincinnati, Ohio.—						
Pure Bone	3701	2.3				20.
Half and Half	3703	1.6	1.0	10.0	6.0	
Harvest King	3705	1.0	3.0	8.0	1.0	
Special Potato and Tobacco Fertilizer	3706	1.6	6.0	6.0	1.0	
Banner Crop Grower	3707	0.8	1.0	7.0	1.0	
Alkaline Bone and Potash	3708		2.0	10.0	1.0	
An Acid Phosphate	4077			13.0	1.0	
"A" Harvest King	4291	0.8	3.0	8.0	1.0	
Corn, Wheat and Oats Grower	4292	1.2	3.5	8.0	1.0	
Special Wheat Fertilizer	4293	0.8	3.0	8.0	1.0	
Golden Rule	4294	0.8	4.0	8.0	1.0	
Black Soil Fertilizer	4295		10.0	6.0	1.0	
Dissolved Bone sand Potash	4299		4.0	10.0	1.0	
Lister, Joseph, Chicago, Ill.— Pure Bone Meal	3141	2.5				25.
Louisville Fertilizer Co., Louisville, Ky.—						
Bone Meal	2785	0.8		3.0	17.0	
Special Wheat Grower	2786	0.8	1.0	7.0	1.0	
Soluble Bone	2788	0.8	1.5	8.0	1.0	
High Grade Tobacco and Potato Grower	2791	1.6	4.0	7.0	1.0	
Melon Special	2936	0.8	1.5	8.0	1.0	
Eagle Raw Bone	3297	2.4				20.
Eagle Indiana High Grade Dissolved Bone	3340			14.0	1.0	
Eagle Indiana Potash Mixture	3841		3.0	10.0	1.0	
Eagle Guano	3433	1.8	3.0	10.0	1.0	
Eagle Indiana Special Corn Grower	3434	0.8	1.0	7.0	1.0	
Tanking	3500	5.0				13.
Nitrate of Soda	3601	15.0				
Sulphate of Potash	3602		48.0			
Muriate of Potash	3503		50.0			
Eagle Indiana Phosphate	3564			13.0	1.0	
Eagle Indiana Slaughter House Bone	3758	1.6	3.0	8.0	1.0	
Kalnit	3838		13.0			
Eagle Standard Bone	3864	3.6				30.
Eagle Potash Manure	3865		10.0	5.0		
Eagle Potash Special	3867	0.8	7.0	7.0	0.5	
Eagle Grain Grower	4038	0.4	4.0	8.0	1.0	
Eagle Indiana Bone and Potash	4036	0.4	1.0	11.0	1.0	
Eagle Truck and Tobacco Grower	4134	2.4	6.0	8.0	1.0	
Mace & Mansfield, Greenville, Ohio.— Mace's Prize Taker Tobacco and Potato Special	4031	1.0	4.0	8.0	2.0	
Perfection Crop-Maker and Potash	4471		2.0	11.0	1.5	
Big Crop-Maker and Potash	4472		3.0	10.0	1.5	
Major Bros. Packing Co., The, Mishawaka, Ind.— Major's Fertilizer	4217	3.5				16.
Mathiason M'fg. Co., P. B., St. Louis, Mo.—						
Increscent Brand Fine Ground Bone Meal	3047	2.5				30.
Increscent Brand St. Louis Fertilizer	3049	1.5	1.5	7.0	3.0	
Increscent Brand Acid Phosphate	3050			14.0	2.0	
Increscent Brand Acidulated Bone Meal	3052	2.5		10.0	4.0	
Increscent Brand Pure Bone Meal	3839	2.6				23.
Increscent Brand Indiana Raw Bone Meal	4007	3.5				23.
Increscent Brand Indiana Extra Fine Ground Bone Meal	4008	3.0				22.
Increscent Brand Indiana Grain Grower	4009	1.7	3.0	8.0	2.0	
Increscent Brand Indiana Acidulated Bone and Potash	4010	2.5	2.0	9.0	3.0	
Increscent Brand Indiana Raw Bone Meal and Potash	4028	2.4	3.0			19.

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Mayer Fertilizer Co., St. Louis, Mo.—						
Mayer's Anchor Brand Acid Phosphate.....	3975	-----	14.0	2.0	-----	-----
Mayer's Anchor Brand St. Louis Bone Meal.....	3976	3.0	-----	-----	-----	18.0
Mayer's Anchor Brand Complete Fertilizer.....	3977	1.6	2.0	8.0	5.0	-----
Mayer's Anchor Brand Bone and Potash.....	3978	1.0	1.0	7.0	5.0	-----
Mayer's Anchor Brand Special Truck Grower.....	3980	3.2	5.0	8.0	3.0	-----
Mayer's Anchor Brand Special Wheat Grower.....	3981	1.0	3.0	10.0	4.0	-----
Mayer's Anchor Brand Soluble Phosphate and Potash.....	4104	-----	5.0	8.0	1.0	-----
Mayer's Anchor Brand Special Corn Grower.....	4179	2.0	3.0	8.0	3.0	-----
Mayer's Anchor Brand Raw Bone Meal.....	4182	3.5	-----	-----	-----	21.0
Mayer's Anchor Brand Tobacco Dust.....	4200	1.0	1.0	-----	-----	-----
Meyers, C. F., Amity, Ind.—						
Meyers Pure Bone Dust.....	3787	2.0	-----	-----	-----	26.0
Meyers Pure Fertilizer.....	3788	2.8	-----	-----	-----	8.5
Monarch Fertilizer Co., Fort Wayne, Ind.—						
Monarch Pure Raw Ground Bone.....	3990	4.0	-----	-----	-----	21.0
Monarch Blood, Bone and Potash.....	3991	1.8	2.0	8.3	3.7	-----
Monarch Grain Grower.....	3992	1.2	2.0	8.0	1.0	-----
Monarch Superphosphate.....	3993	1.8	1.5	10.5	3.3	-----
Monarch 10% Phosphate.....	3747	-----	-----	10.0	1.0	-----
Monarch 10% Acid Phosphate.....	3801	-----	-----	16.0	1.0	-----
Monarch Ideal Grain Grower.....	3802	1.6	2.0	8.0	1.0	-----
Monarch Crop Producer.....	3803	1.8	2.0	7.0	1.0	-----
Monarch Corn and Wheat Grower.....	3912	2.0	2.0	5.0	1.0	-----
Monarch Onion Special.....	3913	2.0	5.0	6.0	1.0	-----
Monarch Tobacco and Truck Fertilizer.....	4108	2.0	10.0	6.0	1.0	-----
Monarch High Grade Tobacco Special.....	4109	1.2	5.0	8.0	1.0	-----
Monarch Onion Grower.....	4110	1.5	8.0	8.0	1.0	-----
Morris & Co., Chicago, Ill.—						
Big One—Pure Ground Raw Bone.....	4091	3.0	-----	-----	-----	24.0
Big Two—Pure Bone Meal.....	4092	2.0	-----	-----	-----	28.0
Big Three.....	4354	2.5	2.0	6.0	4.0	-----
Big Four.....	4353	4.1	4.0	7.0	5.0	-----
Big Five.....	4352	2.5	1.0	6.0	4.0	-----
Big Six—Special Bone Meal.....	4096	0.8	-----	-----	-----	27.0
Big Seven—Special Bone Meal and Potash.....	4097	1.2	3.0	8.0	8.0	-----
Big Eight—Ammoniated Acid Phosphate and Potash.....	4098	0.8	1.0	7.0	1.0	-----
Big Nine.....	4355	1.6	5.0	8.0	2.0	-----
Big Ten—Grain Grower—or 28-2.....	4100	1.6	2.0	8.0	2.0	-----
Mt. Pleasant Fertilizer Co., Inc., Mt. Pleasant, Tenn.—						
Big Success Mt. Pleasant Soluble Bone.....	4188	-----	10.0	2.0	-----	-----
Big Success Mt. Pleasant Special Acid Phosphate.....	4189	-----	12.0	2.0	-----	-----
Big Success High Grade Dissolved Bone.....	4190	-----	14.0	2.0	-----	-----
Soil Builder and Plant Food.....	4191	1.6	2.0	8.0	3.0	-----
Big Success Farmers Friend.....	4192	0.8	1.0	7.0	3.0	-----
Big Success Wheat and Clover.....	4193	0.8	2.0	8.0	3.0	-----
Big Success Corn Special.....	4194	0.8	4.0	8.0	3.0	-----
Big Success Banner Grain Grower.....	4195	-----	2.0	10.0	3.0	-----
Big Success Universal.....	4196	-----	4.0	8.0	3.0	-----
Big Success Wheat Special.....	4197	-----	5.0	10.0	3.0	-----
Mt. Pleasant Untreated Phosphate.....	4198	-----	-----	-----	-----	28.0
Mt. Pleasant High Grade Acid Phosphate.....	4206	-----	14.0	2.0	-----	-----
Big Success Onion Grower.....	4228	0.8	8.0	10.0	2.0	-----
Muriate of Potash.....	4229	-----	50.0	-----	-----	-----
Big Success Blood, Bone and Potash.....	4244	2.4	7.0	9.0	3.0	-----
Big Success Tobacco Grower.....	4245	1.6	5.0	8.0	3.0	-----
South Indiana Tobacco Grower.....	4246	0.8	4.0	8.0	3.0	-----
Wheat Corn and Clover Special.....	4247	-----	8.0	10.0	3.0	-----
Nitrate of Soda.....	4248	15.0	-----	-----	-----	-----

Factory will be moved to Brooklyn, Morgan Co., Ind.

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than					Per Cent. of Total Phosphoric Acid.
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K_2O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.		
Natural Guano Co., Aurora, Ill.— Pulverized Sheep Manure.....	4150	2.5	1.5	-----	-----	-----	1.5
National Fertilizer Co., Nashville, Tenn.— National Wheat Grower.....	3537	1.6	2.0	10.0	1.0	-----	-----
Old Hickory Guano.....	3538	1.6	2.0	8.0	1.0	-----	-----
Magic Plant Food.....	3580	4.1	5.0	10.0	1.0	-----	-----
Ammoniated Dissolved Bone.....	3581	0.8	1.0	10.0	1.0	-----	-----
Sadler's Formula.....	3582	-----	2.0	12.0	1.0	-----	-----
National Grain Grower.....	3583	1.6	2.0	8.0	1.0	-----	-----
National Acid Phosphate and Potash.....	3584	-----	2.0	10.0	1.0	-----	-----
National High Grade Dissolved Bone.....	3585	-----	-----	14.0	1.0	-----	-----
National Acid Phosphate.....	3586	-----	-----	13.0	1.0	-----	-----
National Pure Raw Bone Meal.....	3587	3.3	-----	-----	-----	-----	22.5
National Steamed Bone Meal.....	3588	2.5	-----	-----	-----	-----	22.5
Special Blood and Bone Guano.....	3726	0.8	1.0	7.0	2.0	-----	-----
Special, Old Hickory Guano.....	3726	1.0	2.0	8.0	1.0	-----	-----
Anti-Trust Acid Phosphate and Potash.....	3722	-----	4.0	10.0	1.0	-----	-----
Nitrate Agencies Company, Chicago, Ill.— Nitrate of Soda.....	4225	15.5	-----	-----	-----	-----	-----
Acid Phosphate "High Grade".....	4222	-----	-----	14.0	-----	-----	-----
Muriate of Potash.....	4223	-----	50.0	-----	-----	-----	-----
Kalnit.....	4224	-----	12.0	-----	-----	-----	-----
Sulphate of Potash.....	4230	-----	48.0	-----	-----	-----	-----
Norris Fertilizer Co., Rushville, Ind.— Norris' Little Giant Guano.....	4220	0.8	1.0	7.0	4.0	-----	-----
Norris' Special Wheat Guano.....	4231	1.0	2.0	8.0	3.0	-----	-----
Ofer & Son, L., Dale, Ind.— L. Ofer & Son Pure Raw Bone Meal.....	4454	3.7	-----	-----	-----	-----	20.0
L. Ofer & Son Special Pure Bone Meal.....	4455	0.8	-----	-----	-----	-----	20.7
L. Ofer & Son Special High Grade Tobacco and Truck Grower.....	4456	0.4	8.0	8.0	1.0	-----	-----
L. Ofer & Son Grain Grower.....	4457	1.6	2.0	8.0	1.0	-----	-----
Packer Fertilizer Co., Indianapolis, Ind.— Packer's Half and Half.....	3248	2.0	-----	8.5	6.5	-----	-----
Packer's Phosphate and Potash.....	3252	-----	2.0	10.0	-----	-----	-----
Packer's Superphosphate.....	3253	-----	-----	14.0	-----	-----	-----
Standard Phosphate.....	3254	-----	-----	10.0	-----	-----	-----
Packer's Dissolved Bone.....	3296	-----	4.0	10.0	-----	-----	-----
Our Wheat Grower.....	3553	0.8	1.0	7.0	1.0	-----	-----
Corn and Wheat Special.....	3559	0.8	2.0	8.0	1.0	-----	-----
Our Complete Fertilizer.....	3560	0.8	3.0	8.0	1.0	-----	-----
Our Leader.....	3590	0.8	5.0	8.0	-----	-----	-----
Packer's Bone Meal.....	3909	1.6	-----	-----	-----	-----	22.0
Packers Fertilizer Co., The, Cincinnati, Ohio.— Animal Guano and Potash.....	3435	0.8	4.0	8.0	1.0	-----	-----
Bone Meal.....	3438	2.5	-----	-----	-----	-----	20.0
Pure Bone with Phosphate and Potash.....	3608	1.6	1.0	10.0	6.0	-----	-----
Potato, Tobacco and Truck Manure.....	3817	1.6	6.0	6.0	1.0	-----	-----
Indiana Black Soil Special.....	3829	-----	10.0	6.0	1.0	-----	-----
Humus Phosphate.....	3902	0.4	-----	12.0	1.0	-----	-----
O. K. Fertilizer.....	3933	0.8	1.0	7.0	1.0	-----	-----
Super Phosphate and Potash.....	4133	-----	4.0	10.0	1.0	-----	-----
Sweepstakes.....	4205	1.2	2.5	8.0	1.0	-----	-----
Ammoniated Phosphate.....	4206	0.8	3.0	8.0	1.0	-----	-----
Acidulated Phosphate and Potash.....	4297	-----	2.0	10.0	1.0	-----	-----
Acidulated Phosphate.....	4298	-----	-----	12.0	1.0	-----	-----
Pearl Packing House, Madison, Ind. The "Pearl Brand".....	4083	5.2	-----	-----	-----	-----	15.0

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.

Guaranteed by the Manufacturers to contain not less than

Official Number.	Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
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Pero & Stoecker, Louisville, Ky.—					
Pure Potato Grower	3632	3.5	6.0	—	10.0
Pure Animal Matter Corn and Wheat Grower	3633	3.5	—	—	10.0
Pure Bone Meal	3624	3.2	—	—	22.0
Pure Animal Matter and Potash	3945	4.0	4.0	—	10.0
Pioneer Fertilizer Company, Chicago, Ill.—					
Muriate of Potash	4331	—	45.0	—	—
Kainit	4332	—	12.4	—	—
Pioneer Bone Meal	4333	2.5	—	—	25.0
Pioneer Chicago Bone Meal	4334	1.6	—	—	30.0
Pioneer High Grade Acid Phosphate	4335	—	—	14.0	1.0
Pioneer High Grade Phosphate and Potash	4336	—	4.0	10.0	1.0
Pioneer Truck and Corn Grower	4337	0.8	4.0	9.0	1.0
Pioneer Potato and Vegetable Grower	4338	1.6	7.0	9.0	2.0
Pioneer General Crop Grower	4339	1.6	2.0	9.0	2.0
Sulphate of Potash	4340	—	48.0	—	—
Pinalre, Jos. F., Ramsey, Ind.—					
Jos. F. Pinalre Corn and Wheat Grower	4458	0.4	2.0	10.0	1.0
Jos. F. Pinalre Pure Bone Meal and Potash	4459	0.8	4.0	—	20.0
Jos. F. Pinalre Grain Grower	4460	1.6	2.0	8.0	1.0
Jos. F. Pinalre Pure Raw Bone Meal	4461	3.7	—	—	20.0
Jos. F. Pinalre Special Crop Grower	4462	0.8	4.0	8.0	1.0
Jos. F. Pinalre Pure Bone Meal	4463	2.4	—	—	22.8
Pulverized Manure Co., The, Chicago, Ill.—					
Wizard Brand Manure	4209	2.0	1.7	—	1.5
Queen City Fertilizer Co., Cincinnati, Ohio.—					
High Grade Wheat and Grass Grower	3511	—	—	14.0	1.0
High Grade Corn and Wheat Grower with Potash	3512	—	2.0	10.0	1.0
Bone Meal	3543	2.5	—	—	20.0
Special Wheat Grower	3544	—	—	9.0	1.0
Tobacco and Potato Grower	3518	0.8	4.0	8.0	1.0
Bone with Phosphate and Potash	3763	1.7	1.0	10.0	6.0
A. Valley Gem Phosphate	4053	1.0	2.0	8.0	1.0
A. Miami Valley Grain Grower	4054	1.2	2.5	8.0	1.0
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.—					
Rauh's Ideal Phosphate	3185	—	—	10.0	—
Rauh's Red Star Phosphate	3186	—	—	14.0	—
Rauh's Phosphate and Potash	3189	—	2.0	10.0	—
Rauh's Special	3192	1.6	6.0	10.0	—
Rauh's Half Pure Raw Bone and Half Pure Bone Phosphate	3193	1.2	—	8.5	11.0
Rauh's Lawnmure	3194	1.0	—	8.5	10.0
Sulphate of Potash	3197	—	48.5	—	—
Rauh's Grain Grower	3308	—	4.0	10.0	—
Our Soluble Bone	3552	0.8	1.0	7.0	1.0
Corn and Wheat Grower	3553	0.8	2.0	8.0	1.0
Our Dissolved Bone and Potash	3554	0.8	8.0	8.0	1.0
Rauh's Tomato Fertilizer	3731	1.6	6.0	10.0	—
Nitrate of Soda	3743	15.6	—	—	—
Pure Bone	3804	1.6	—	—	22.0
Peerless Fertilizer	3805	0.4	8.0	8.0	1.0
Read Phosphate Co., Nashville, Tenn.—					
Read's Blood and Bone Fertilizer No. One	3037	1.6	2.0	8.0	1.0
Read's Wheat and Clover Grower	3038	0.8	2.0	10.0	1.0
Read's Dissolved Bone Phosphate	3039	—	—	10.0	1.0
Read's High Grade Acid Phosphate	3040	—	—	14.0	1.0
Read's XXX Dissolved Bone	3041	—	—	13.0	1.0
Read's Bone and Potash	3042	—	2.0	10.0	1.0
Fine Ground Bone	3043	2.0	—	—	20.2

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Read Phosphate Co., Nashville, Tenn.—						
Muriate of Potash	3044	49.0				
Nitrate of Soda	3045	14.7				
Read's Corn Grower Special	3224	0.8	1.0	10.0	1.0	
20% Manure Salts	3265		20.0			
McKee's Dissolved Bone Phosphate	3367			14.0	2.0	
Read's Ground Bone	3439	2.4				17.0
Read's High Grade Special Potash Mixture	4042		4.0	10.0		
Read's 10-4-4 Guano	4043	3.3	4.0	10.0		
Read's Cannon Ball	4215	0.5	1.7	8.0		
Read's Indiana Special	4216	0.8	1.0	7.0		
Read's Special Bone and Potash	4249		5.0	10.0		
Read's Complete Fertilizer	4250	0.8	3.0	8.0	1.0	
Read's Vegetable Fruit and Vine Grower	4251	1.6	8.0	6.0	1.0	
Read's Farmers Special Mixture	4252	0.8	3.0	11.0	1.0	
Reese, Jacob, Estate of, Darby, Pa.—						
Odorless Slag Phosphate	4178					18.0
Ruhm, Jr., John, Mt. Pleasant, Tenn.—						
Ground Phosphate Rock	4480					23.0
Schmadel, Louis, Evansville, Ind.—						
Schmadel's Bone Meal	2961	4.0				16.0
Schmadel's Mixed Fertilizer	3371	2.0		8.0	8.0	
Schmadel's Wheat Grower	4226	2.5	0.5			10.0
Schmadel's Grain Grower	4486	1.8	2.5			10.5
Seneca Fertilizer Co., The, Tiffin, Ohio.—						
Seneca Wheat Grower No. 1	3771	2.0	3.0			13.0
Seneca Acidulated Pure Bone	3772	2.6				20.0
Seneca High Grade Phosphate	3773			16.0	1.0	
Seneca Potato and Vegetable Manure	3774	1.2	6.0	8.0	2.0	
Seneca All Crop Special	3775	1.2	1.5	10.0	1.0	
Seneca John's Tax Payer	3777	0.8	1.0	8.0	1.0	
Nitrate of Soda	3962	14.0				
Smith, Wm., Jr., Columbus, Ind.—						
Soft Bone Fertilizer	3131	5.0				15.0
Smith Agricultural Chemical Co., The, Columbus, Ohio.—						
S. A. C. Co., Tankage	3637	9.0				
S. A. C. Co., Muriate of Potash	3638		49.0			
S. A. C. Co., Nitrate of Soda	3639	15.7				
S. A. C. Co., Sulphate of Potash	3658		48.0			
Potato and Tobacco Special	4366	1.6	4.0	8.0	1.0	
Vegetable Formula	4367	3.2	7.0	6.0	1.0	
Special Potato Formula	4368	0.8	10.0	6.0	1.0	
German Formula	4369	0.8	2.0	10.0	10.0	
Bone Meal	4370	1.6				20.0
Abbott & Martins York Special	4371	0.8	7.0	8.0	1.0	
Abbott & Martins Harvest King	4372	1.2	2.0	8.0	1.0	
Abbott & Martins Universal Fertilizer	4373	0.8	4.0	8.0	1.0	
Abbott & Martins Peerless Phosphate and Potash	4374	0.8	2.0	8.0	1.0	
Abbott & Martins Dissolved Phosphate and Potash	4375		5.0	10.0	1.0	
Abbott & Martins Star Phosphate	4376		2.0	10.0	1.0	
Abbott & Martins Hercules Phosphate	4377			14.0	1.0	
Abbott & Martins Tennessee Phosphate	4378			12.0	1.0	
Chicago Fertilizer Co.'s New Leader	4379	0.8	7.0	8.0	1.0	
Chicago Fertilizer Co.'s Potash Special	4380	0.8	4.0	8.0	1.0	
Chicago Fertilizer Co.'s B. B. and P. Brand	4381	1.2	2.0	8.0	1.0	
Chicago Fertilizer Co.'s Western Phosphate and Potash	4382	0.8	2.0	8.0	1.0	
Chicago Fertilizer Co.'s Diamond Phosphate and Potash	4383		5.0	10.0	1.0	
Chicago Fertilizer Co.'s Calumet Phosphate	4384		2.0	10.0	1.0	

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Smith Agricultural Chemical Co., The, Columbus, Ohio.—						
Chicago Fertilizer Co.'s Diamond Phosphate.....	4385			14.0	1.0	
Chicago Fertilizer Co.'s Acid Phosphate.....	4386			12.0	1.0	
Hardy's Imperial Phosphate.....	4387	0.8	7.0	8.0	1.0	
Hardy's Potash Fertilizer.....	4388	0.8	4.0	8.0	1.0	
Hardy's Tankage Phosphate and Potash.....	4389	1.2	2.0	8.0	1.0	
Hardy's Corn and Wheat Grower.....	4390	0.8	2.0	8.0	1.0	
Hardy's Acme Phosphate.....	4391		5.0	10.0	1.0	
Hardy's Phosphate and Potash.....	4392		2.0	10.0	1.0	
Hardy's Security Phosphate.....	4393			14.0	1.0	
Hardy's Dearborn Phosphate.....	4394			12.0	1.0	
Ohio Farmer's Excelsior Phosphate.....	4395	0.8	7.0	8.0	1.0	
Ohio Farmer's Ammoniated Phosphate and Potash.....	4396	0.8	4.0	8.0	1.0	
Ohio Farmer's Corn, Oats and Wheat Fertilizer.....	4397	1.2	2.0	8.0	1.0	
Ohio Farmer's Wheat Maker and Seeding Down.....	4398	0.8	2.0	8.0	1.0	
Ohio Farmer's Soluble Phosphate and Potash.....	4399		2.0	10.0	1.0	
Ohio Farmer's Climax Phosphate.....	4400		5.0	10.0	1.0	
Ohio Farmer's Alkaline Phosphate.....	4401			14.0	1.0	
Ohio Farmer's Superior Phosphate.....	4402			12.0	1.0	
Smith & Company, Springfield, Ill.—						
Smith's Ammoniated Bone.....	3879	3.5				23.0
Royal Kainit.....	3987		12.4			
Royal Grain Grower.....	3988	1.2	3.0	10.0	3.0	
Royal Plant Food.....	3989	2.8	2.0	8.0	4.0	
Royal Bone Meal.....	4027	2.5				24.5
Royal Favorite.....	4052	1.6	2.0	10.0	3.0	
Royal Vegetable Grower.....	4188	2.2	8.0	8.0	4.0	
Southern Indiana Fertilizer Co., Boonville, Ind.—						
Soluble Bone.....	3125	1.2		10.0		
High Grade Acid Phosphate.....	3342			14.0		
Raw Bone Meal.....	3343	8.0				28.0
Muriate of Potash.....	3344		50.0			
Soluble Bone and Potash.....	3373	1.0	4.0	10.0		
"A" Bone Meal.....	3659	3.0				20.0
Southern Seed Company, Louisville, Ky.—						
Florist's Bone and Tobacco.....	3861	2.4	5.0			10.0
Bone Mixture.....	4241	1.6	3.0	10.0	6.0	
Star Tankage & Fertilizer Works, Vincennes, Ind.—						
Star Raw Bone Meal.....	3382	2.9				20.0
"A" Star Corn Mellon and Potatoo Grower.....	3728	1.5	2.0	9.0	2.0	
Champion Mellon Grower.....	3734	2.0	4.0	8.0	2.0	
Special Wheat Grower.....	3836	1.0	1.0	9.0	2.0	
Champion Grain Grower.....	3837	0.5	1.0	8.0	1.0	
Soluble Bone.....	3863			12.0	1.0	
Star Dissolved Bone and Potash.....	4483		4.0	8.0	1.0	
Swan Creek Phosphate Co., Chicago, Ill.—						
Raw Rock Phosphate.....	4234					27.0
Swift & Company, Chicago, Ill.—						
Swift's Garden City Phosphate.....	2716			14.0		
Swift's Pure Raw Bone Meal.....	2755	3.7				23.0
Swift's Special Phosphate and Potash.....	3445		2.0	10.0	1.0	
Swift's High Grade Muriate of Potash.....	3649		50.0			
Swift's Pure Special Bone Meal.....	3882	0.8				27.5
Swift's Pure Bone Meal.....	3885	2.5				25.0
Swift's Pure Ammoniated Bone and Potash.....	3886	4.7	3.0			16.0
Swift's Pure Bone Meal and Potash.....	3887	2.5	3.0			23.5
Swift's Pure Ammoniated Bone.....	3888	5.0				17.0
Swift's Pure Bone Meal and Blood.....	3889	3.7				23.0

Brands Registered Under Act of March 11, 1901.—Continued.

LABEL.	Official Number.	Guaranteed by the Manufacturers to contain not less than				
		Per Cent. of Nitrogen (N).	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total
Swift & Co., Chicago, Ill.—						
Swift's Sulphate of Potash	3993		50.0			
Swift's Special High Grade Phosphate and Potash	4004		10.0	6.0		
Swift's Ground Dried Blood	4113	13.1				
Swift's Dissolved Animal Bone	4343	0.6		30.0	3.0	
Swift's Dissolved Animal Bone and Potash	4347	0.6	4.0	18.0	3.0	
Swift's Ground Steamed Bone	4348	1.6				30
Swift's Corn and General Crop Grower	4349	0.8	7.0	6.0	1.0	
Swift Truck Grower	4350	0.8	4.0	8.0	1.0	
Swift Champion Wheat and Corn Grower	4357	1.6	3.0	13.0	3.0	
Swift Complete Fertilizer	4358	1.0	1.0	8.0	1.0	
Swift Superphosphate	4359	1.6	3.0	8.0	3.0	
Swift Kalnit	4360		13.4			
Sulphate of Potash	4361		48.0			
Muriate of Potash	4362		45.0			
Swift's Potato, Celery and Onion Grower	4333	0.8	10.0		1.0	
Swift's Onion, Potato and Tobacco Fertilizer	4364	1.6	7.0	8.0	3.0	
Swift High Grade Phosphate and Potash	4403		4.0	10.0	1.0	
Swift Vegetable Grower	4404	3.9	10.0	9.0	2.0	
Tennessee Chemical Co., Nashville, Tenn.—						
Ox Raw Bone	3308	2.4				30
Ox Bone Meal	3301	0.8				30
Ox Special Wheat Grower	3329	0.8	1.0	7.0	1.0	
Ox Indiana Dissolved Bone	3332			14.0	1.0	
Ox Indiana Phosphate	3333			13.0	1.0	
Ox Indiana Potash Mixture	3334		3.0	10.0	1.0	
Ox Indiana Alkaline Bone	3338		3.0	12.0	1.0	
Ox Indiana Special Corn Grower	3426	0.8	1.0	7.0	1.0	
Ox Indiana Slaughter Bone	3442	1.6	2.0	8.0	1.0	
Ox Indiana Ammoniated Bone	3457	1.6	3.0	10.0	1.0	
Ox Potash Formula	3735		4.0	10.0	1.0	
Ox High Grade Tobacco and Potato Grower	3821	1.6	4.0	7.0	1.0	
Ox Grain Grower	4040	0.4	4.0	8.0	1.0	
Ox Indiana Bone and Potash	4068	0.4	1.0	11.0	1.0	
Ox Potash Special	4183	0.8	7.0	7.0	0.5	
Tennessee Phosphate Floats Co., Columbia, Tenn.—						
Tennessee Floats	3992					30
Tuesberg, C. Elmer, Knox, Ind.—						
Nitrate of Soda	4446	15.6				
Muriate of Potash	4447		50.0			
Sulphate of Potash	4448		48.0			
Acid Phosphate	4449			14.0		
Turley Co., T. J., Owensboro, Ky.—						
Ideal Grain Grower	4213	0.8	3.0	8.0	1.0	
Ideal Bone	4214	3.4				30
Ideal Tobacco Grower	4484	1.6	4.0	8.0	0.5	
Ideal Truck and High Grade Tobacco Grower	4485	1.6	8.0	10.0	0.5	
Tuscarora Fertilizer Company, Chicago, Ill.—						
Tuscarora Raw Bone	3461	3.7				30
Ammoniated Phosphate	3463	0.8	1.0	7.0	3.0	
Tuscarora Standard	3463	1.6	2.0	8.0	3.0	
Bone and Potash	3464		3.0	10.0	3.0	
Acid Phosphate	3465			14.0	3.0	
Animal Bone	3466	3.4				30
Tuscarora Acidulated Bone Meal	3496	1.6		11.0	7.0	
Tuscarora Steamed Bone	3530	1.6				30
Tuscarora Bone Phosphate	3539			10.0	3.0	
Acidulated Bone Meal and Potash	3545	1.6	3.0	13.0	6.0	
A. B. Norris Fertilizer Co. Brand, "Norris Bone Meal"	3610	1.6				30

Brands Registered Under Act of March 11, 1901.—Concluded.

LABEL.	Official Number	Guaranteed by the Manufacturers to contain not less than				
		Trogen (N). Per Cent. of Ni.	Per Cent. of Potash (K ₂ O) Soluble in Water.	Per Cent. of Soluble and Reverted Phosphoric Acid.	Per Cent. of Insoluble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.
Tuscarora Fertilizer Company, Chicago, Ill.—						
A. B. Norris Fertilizer Co. Brand, "Special Corn and Wheat".....	3611	1.2	2.0	8.0	2.0	-----
A. B. Norris Fertilizer Co. Brand, "Soluble Dissolved Bone".....	3612	-----	-----	14.0	2.0	-----
A. B. Norris Fertilizer Co. Brand, "Wheat and Clover".....	3613	-----	-----	16.0	2.0	-----
A. B. Norris Fertilizer Co. Brand, "High Grade Bone and Potash".....	3614	-----	4.0	10.0	2.0	-----
A. B. Norris Fertilizer Co. Brand, "Bone and Potash".....	3615	-----	2.0	10.0	2.0	-----
Tuscarora Garden	3629	2.8	4.0	8.0	-----	-----
Big (4) Four	3630	1.6	4.0	7.0	-----	-----
Tuscarora Trucker	3650	4.1	7.0	8.0	-----	-----
Soluble Phosphate with Potash	3666	-----	4.0	10.0	-----	-----
Tuscarora Chief	3732	0.8	4.0	8.0	-----	-----
German Kalnit	3754	-----	12.0	-----	-----	-----
Tuscarora High Grade	3815	-----	8.0	10.0	-----	-----
A. B. Norris Fertilizer Co. Brand, Wheat Special.....	3866	0.8	2.0	12.0	-----	-----
A. B. Norris Fertilizer Co. Brand, Fish Guano.....	4000	0.8	1.0	8.0	-----	-----
A. B. Norris Fertilizer Co. Brand, Tobacco Special.....	4001	0.8	1.0	7.0	-----	-----
Grain Special	4011	0.8	3.0	8.0	-----	-----
Muriate Potash	4012	-----	48.0	-----	-----	-----
Tuscarora Fruit and Potato	4286	1.6	10.0	8.0	-----	-----
Sulphate of Potash	4487	-----	50.0	-----	-----	-----
Walton Fertilizer Co., The, Cincinnati, Ohio.—						
Diamond Cereals Soluble Bone	3155	0.4	-----	15.0	1.0	-----
Weldman, Augustus, Hagerstown, Ind.—						
Wheat and Grass Grower	3135	1.5	1.7	9.0	1.5	-----
Steamed Bone	3525	0.5	-----	-----	-----	18.0
Nitrate of Soda	3526	14.0	-----	-----	-----	-----
Muriate of Potash	3527	-----	50.0	-----	-----	-----
Corn Grower	4139	0.7	4.0	9.0	1.0	-----
An Acid Phosphate	4474	-----	-----	14.0	-----	-----
Western Fertilizer Works, Indianapolis, Ind.—						
Wheat and Clover Grower	3396	1.2	1.5	8.0	1.0	-----
Wheat and Corn Special	3397	0.8	1.0	8.0	0.5	-----
Complete Fertilizer	3398	0.4	1.0	7.0	0.5	-----
Dissolved Bone and Potash	3399	-----	2.0	8.0	0.5	-----
Acid Phosphate	3400	-----	-----	12.0	0.5	-----
Bone Meal	3401	1.7	-----	-----	-----	20.0
Spring Special	3908	0.8	3.0	8.0	0.5	-----
German Kalnit	3906	-----	12.0	-----	-----	-----
Truck Special	4185	1.5	5.0	8.0	0.5	-----
Wulchet Fertilizer Co., The Dayton, Ohio.—						
"Onion and Truck Fertilizer".....	3504	1.5	8.0	8.0	1.0	-----
"Raw Bone and Phosphate".....	3505	2.0	1.0	10.0	5.0	-----
"Miami Phosphate".....	3598	1.0	3.0	9.0	1.0	-----
"Superior Pure Raw Bone".....	3597	2.0	-----	-----	-----	23.0
"A" Spot Cash Fertilizer	3940	1.5	2.0	9.0	2.0	-----
"A" Ruby Phosphate	3941	0.5	1.0	9.0	1.0	-----
Huckeye Phosphate	4184	-----	-----	14.0	1.0	-----
"A" Competitor	4257	-----	2.0	10.0	1.0	-----
"A. A." Gem	4258	0.5	5.0	8.0	1.0	-----

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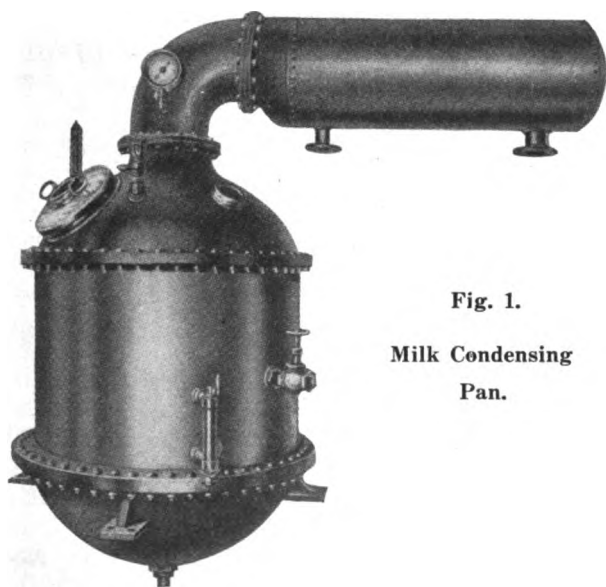


Fig. 1.

Milk Condensing
Pan.

**THE ESTIMATION OF FAT IN UNSWEETENED EVAPOR-
ATED MILK BY MODIFIED METHODS.**

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THE ESTIMATION OF FAT IN UNSWEETENED EVAPORATED MILK.

O. F. HUNZIKER.

G. W. SPITZER.

Purpose.

The purpose of the experiments described in this bulletin is to determine the cause of the low per cent. of butter-fat in a large portion of the evaporated milk on the market as reported by chemists and pure food departments throughout the country. Since the introduction and passage by Act of Congress, 1906, of the new pure food standards requiring a definite minimum per cent. of fat and solids in evaporated milk, the product from numerous milk condensing factories has been found below standard in per cent. of fat, rendering them liable to prosecution by government and state authorities.

In some isolated cases the low fat content of the evaporated milk may have been due to the partial skimming of the fresh milk. By far the majority of condensories, however, have no separators in their factories and are bending their efforts towards the manufacture of a first-class product. And yet the analyses of much of the milk coming from these factories show a marked deficiency in butter-fat. Although various theories have been advanced to explain the why of this fact, the real cause was not known, thus rendering the manufacturer helpless in his task to remedy the defect. With the desire to locate the loss of fat in their product numerous manufacturers throughout the country applied to this department for assistance.

In order to successfully solve this problem it was deemed necessary to attempt a series of experiments in co-operation with condensing factories, the results of which are herein stated.

Description of Process of Manufacture.

In order to enable the reader to more readily comprehend the channels through which butter-fat may escape from the milk in the condensory, the process of manufacture is briefly described below.

The milk is first heated to temperatures varying in the different factories from 160 degrees F. to the boiling point. The apparatus used for heating may be an open copper kettle where live

steam is turned into the milk, or it may be a jacketed kettle equipped with a revolving stirrer, the jacket furnishing the heating surface, or a continuous pasteurizer may be used. In most factories live steam is turned direct into the milk.

The hot milk is drawn up into the vacuum pan where it is condensed under reduced pressure (about 25 inches of vacuum) and at a temperature of from 130 degrees F. to 150 degrees F. The length of time it takes for condensing the milk down to the desired consistency varies with the amount of milk in the pan, area of heating surface, capacity of vacuum pump and amount and temperature of water in the condenser. In some factories the condensed milk is superheated before it leaves the vacuum pan by conducting live steam into it. In others this part of the process is omitted.

The condensed milk with a specific gravity of about 1.06 to 1.09 is then cooled, filled into tin cans, the cans are hermetically sealed and are now ready for the sterilizer.

The sterilizer is a huge cylinder, heavily constructed and carrying in its interior a revolving frame-work into which the cans are placed and locked. In the sterilizer the cans are heated with steam under pressure to temperatures varying from 226 degrees F. to 240 degrees F. according to the process employed, the condition of the milk and the season of the year. The sterilizing process occupies from one to two hours, varying with the temperature applied and rapidity of heating. Before the cans leave the sterilizer they are cooled sufficiently so they can be handled conveniently.

From the sterilizer the cans pass into the shaker, a machine consisting of one or more heavy iron boxes into which the cans are wedged and which move back and forth on an eccentric, subjecting the cans and their contents to violent shaking, for the purpose of giving the evaporated milk a smooth and homogeneous body.

Relation of Fat in Fresh Milk to Per Cent. of Fat in Condensed Milk.

If no losses of fat occur in the factory the pounds of fat found in the finished product should be equal to the pounds of fat in the fresh milk used, or, the per cent. of fat in the finished product should be equal to the per cent. of fat in the fresh milk multiplied by the ratio of concentration. Thus, let us assume that the ratio of concentration is 2 to 1, that is two pounds of fresh milk are condensed to one pound of condensed milk. Then 2000

pounds of 4 per cent. milk must make 1000 pounds of 8 per cent. (4x2) evaporated milk.

But, strange as it may seem, comparisons of the chemical estimation as well as the Babcock test with the per cent. of fat in the condensed milk as calculated upon the basis of the per cent. of fat in the fresh milk and the ratio of concentration persistently show marked differences. The per cent. of fat as determined by analysis or by Babcock test is always lower than the calculated per cent. of fat. This difference is variable and has been found in some cases as great as 2.5 per cent., as will be shown in subsequent chapters. The significance of this fact becomes very real when we realize that the product is condemned and the manufacturer prosecuted on the basis of the per cent. of fat found in the finished product, without regard to the richness of the fresh milk from which it is made. The manufacturer may be perfectly honest in his statement that his fresh milk tested 4 per cent. fat, that he removed no cream from it, that he condensed it at the ratio of 2 to 1, and that the condensed milk, therefore, must contain 8 per cent. of fat. What recourse has he when the state authorities tell him that careful analyses prove beyond a doubt that his evaporated milk contains only 6 per cent. fat and that, since the minimum legal standard is 7.7 per cent., he is subject to prosecution? Where did the remainder of the fat go?

Popular Attempts to Explain the Causes of the Shortage of the Per Cent. of Fat in the Evaporated Milk.

The parties enforcing the law are usually not familiar with the process of manufacture, its possibilities and impossibilities. Since they wield the results of their analyses or tests with a firmness that admits of neither doubt nor argument, the deficiency is laid at the door of the manufacturer. He either intentionally skims a part of the fresh milk, or he is careless in his process, or he does not know his business. This attitude has led the multitude to believe that the shortage of fat in the evaporated milk is due to loss of fat in the factory, and the less that is known concerning the why of a phenomenon of this kind the more generous is the human mind usually in advancing theories.

Consequently it has been suggested by some that fat is lost during the process of heating. It is true that a scum of albumin forms when the milk is heated to the boiling point. This scum tests about 10 to 15 per cent. of fat, as shown below, and it usually remains in the heaters when the milk is drawn into the vacuum

pan. The following is a complete analysis of the scum taken from the hot wells of a condensory:

SCUM FROM HOT-WELLS.

Moisture	78.49 per cent.
Fat	12.94 per cent.
Curd	6.49 per cent.
Ash	.97 per cent.

Total 98.89 per cent.

A batch of 10,000 pounds of milk produces at the most from two to three pounds of this scum which could not possibly reduce the per cent. of fat in the condensed milk sufficiently to be detected. Moreover, tests for fat of the milk before and after heating do not show any decrease in the per cent. of fat in the heated milk.

Again, it is believed by some that, when the milk is condensing in the vacuum pan, some of the fat, owing to its lightness, is sucked over into the condenser and is consequently lost. Here again it is true that a careless operator may allow some of the spray of milk to be drawn over and pass off into the sewer, but if there is any place or time where or when the mechanical condition of milk presents a perfect emulsion, it certainly takes place in the vacuum pan during the process of condensing, where, owing to the reduced pressure, the milk is subjected to such uniform and active agitation that it may well be termed homogenized milk. If, therefore, any of the fat is lost, the milk is lost with it, and, while this means a decrease in the total amount of condensed milk made, the per cent. of fat remains the same. Furthermore, this loss of milk in the pan usually occurs in rare and accidental cases only.

And finally it is claimed by many that, when boiling in the vacuum can, the milk loses its volatile fats (volatile fatty acids). The impossibility of this last theory is clearly shown by the results of experiments described in a succeeding chapter where the investigations further demonstrate that the per cent. of fatty acids in the finished product is entirely normal.

The above brief discussion is sufficient to emphasize that there is absolutely no proof of any loss of fat during the process of manufacture.

Results of Original Investigations.

Per Cent. of Fat by Ether Extraction and Babcock Test vs. Per Cent. of Fat Calculated and Based on the Per Cent. of Fat in the Fresh Milk and the Ratio of Concentration.

A comparison of our analyses and tests of evaporated milk for fat with the results of analyses of the same milks, made by pure food departments and commercial chemists showed that their results were uniformly lower than ours. Sometimes the difference was as great as 3 per cent. Notwithstanding this fact our own analyses also fell short of the per cent. of fat which the respective lots of condensed milk should contain, basing the calculations on the per cent. of fat in the fresh milk and the degree of concentration. Results of experiments conducted in co-operation with the Indiana Condensed Milk Co. at Sheridan, Indiana, are tabulated in Table I. They show that, in every case, there is a shortage in the per cent. of fat as determined by the Babcock test and the ether extraction. This shortage is almost uniformly greater in the ether extraction than in the Babcock test. Neither in the Babcock test nor in the ether extraction is there any uniformity of shortage, the loss varying from .05 per cent. to 1.22 per cent. Exceptions reserved, the loss of fat seems to increase with the increase of the concentration. While the losses shown in Table I do not appear very large, yet they are sufficient to condemn condensed milk as being below standard, which, without these losses, might easily contain the standard per cent. of fat, as calculated on the basis of the per cent. of fat in the fresh milk and the ratio of concentration. The fact that these analyses and tests were made with the utmost care and that the analyses of the same milk, made by commercial chemists in most cases show twice the shortage above indicated, further emphasizes the need of sounding the causes of this deficiency. And finally it must be stated that, in the case of the Babcock test of this evaporated milk, clear tests are the exception rather than the rule. The repeated appearance of black sediment and flocculent charred masses in the necks of the test bottles seriously interferes with the accuracy of the reading and introduces an element of doubt as to the reliability of the tests.

TABLE I.

Showing Difference Between the Per Cent. of Fat as Tested with the Babcock Test and Estimated with Ether Extraction, and the Per Cent. of Fat as Calculated on the Basis of Per Cent. of Fat in Fresh Milk and Ratio of Concentration.

Fresh Milk		Condensed Milk			Babcock Test Per cent Fat	Ether Extraction Per cent. Fat	Shortage Babcock Test Per cent. Fat	Shortage Ether Extraction Per cent. Fat
Per cent. Fat	Per cent. Solids	Per cent. Solids	Concentration	Calculated Per cent. Fat				
4.6	13.4	21.12	1.58 to 1	7.25	6.9	6.83	.35	.42
4.6	13.4	23.25	1.74 to 1	7.98	7.7	7.46	.28	.52
4.6	13.4	25.48	1.9 to 1	8.74	8.1	8.13	.64	.61
4.6	13.4	26.62	1.99 to 1	9.14	8.7	8.33	.44	.81
4.6	13.4	28.23	2.11 to 1	9.70	9.1	8.67	.60	1.03
4.6	13.4	30.10	2.25 to 1	10.35	10.3	9.13	.05	1.22
4.6	13.4	25.23	1.89 to 1	8.68	8.0	7.90	.68	.78
3.75	11.75	22.79	1.94 to 1	7.27	6.86	6.83	.41	.44
3.75	11.75	24.81	2.11 to 1	7.91	7.45	7.28	.46	.63
3.75	11.75	26.01	2.21 to 1	8.29	7.70	7.74	.59	.55
3.75	11.75	27.33	2.33 to 1	8.84	8.33	8.10	.51	.74
3.75	11.75	29.37	2.5 to 1	9.38	8.63	8.86	.75	.52

*—The official method was used, extracting coil for 8 hours.

CONCERNING THE LOSS OF "VOLATILE FATS."

The following is an extract of a letter written by a "would-be chemist" to the manager of a milk condensing company. The letter was an answer to an inquiry on the part of the manufacturer concerning the cause of the losses of butter-fat during the process of manufacture:

"With regard to the loss of butter-fats by evaporation at temperatures between 115 degrees F. and 150 degrees F. you are distilling over at every run at least a quarter of a pound to half a pound of butter-fat to every hundred of fresh milk you boil. This has long been admitted and can be proven by sending your fresh milk to a chemist, not a 'Babcocker,' and a sample of your evaporated milk. We analyze daily fifteen samples at two laboratories and have for ten years past, and we know that butter-fats distill over in vacuum, i. e. evaporation at such a high temperature. The Condensed Milk Company are reported as large buyers of butyric acid. Now butyric, caprilin, caproin and laurin are all volatile elements of milk and in testing analytically we use

the Reichert Meissl test ether distilling method of driving off all butter-fats into a condenser and weigh that which has gone over. You can improve your apparatus by putting on an oil condenser and catcher."

Our aim in making public the above statement is not so much to furnish amusement for the true chemist, but rather to show the manufacturer, who cannot be expected to be versed in chemical analysis, the absurdity and impossibility of the theory advanced in it. Such remarks sound plausible enough to laymen and are undoubtedly largely responsible for the widely accepted assumption that the losses of fat in the process of manufacture are the result of the escape of the volatile fatty acids.

The butter-fats may be classified as follows:

Glycerides of	{	the insoluble or non-volatile fatty acids. the soluble or volatile fatty acids.
---------------	---	--

The non-volatile fatty acids are the most stable; they are insoluble in water and are not affected by ordinary distillation, while the volatile fatty acids are soluble in water and may be distilled under restricted conditions.

The glycerides of the fatty acids represent a combination of glycerin which is the base, and of fatty acids which are the radicals. The glycerides of neither the soluble nor the insoluble fatty acids are soluble in water, nor are they volatile. When separated from the glycerin, then the fatty acids of the glycerides of the volatile acids are volatile.

The volatile fatty acids are combined with the glycerin, forming glycerides or fats, in a similar way as chlorine (Cl) is combined with sodium (Na) forming common salt (NaCl). Chlorine is a volatile gas, but when combined with sodium, forming salt, it is non-volatile. The same holds true with the volatile fatty acids. As long as the chemical combination between base and radical, or between glycerin and fatty acids exists, any escape or volatilizing of the fatty acids is impossible. The heating of the milk to, and condensing at temperatures below the boiling point, does not break up this combination; it does not separate the fatty acids from the glycerin. There is nothing to escape or vaporize, therefore, and there can be no loss of fats during the process of condensing.

Again, the mixture of tri-glycerides of the soluble and insoluble fatty acids gives to butter its peculiar character. "If

glyceryl tri-butyrate existed as such in milk fat it should be possible to distil it off under reduced pressure, but this cannot be done¹.

On the other hand, if the fatty acids are separated from the glycerin, then the fatty acids of the glycerides of the volatile acids become volatile and pass over. This separation of the glycerin from the acid radical can only be affected by saponifying the glycerides—the acid radical combines with the base of the saponifying agent. On adding an acid the free acids of butterfat are liberated and we have a mixture of volatile and non-volatile fatty acids. The volatile fatty acids can now be distilled over. This is the principle of the Reichert Meissl test referred to. No authority on the subject has ever admitted that the volatile fats are lost in the milk condensing process.

The volatile fats, consisting largely of butyrin, caproin and caprilin, make up about 6 to 8 per cent. of the total fats in milk. Assuming that milk tests 4 per cent. fat, .32 per cent. of the 4 per cent. of total fats would then be volatile fats, or, every 100 pounds of milk contains then .32 pounds of volatile fats. The volatile fats consist of about one-fifth glycerin and four-fifths fatty acids. If, by the use of certain chemicals, the fatty acids were separated and driven off, the greatest possible loss could only be four-fifths of .32 or .25 per cent. Thus, if there were a loss of volatile fats during the condensing process, which, as shown above, is impossible, it would be .25 per cent., provided that all the fatty acids escaped.

When once separated it is beyond the means of human ingenuity to again combine the fatty acids with the glycerin present in the milk. The addition of butyric acid to milk would not only not replace the butyrin, but it would spoil the milk. The suggestion that some milk condensing companies purchase butyric acid for the purpose of putting it into their condensed milk to replace the lost butyrin has, therefore, no foundation. Some milk condensing companies are operating, in connection with their condensories, candy factories where they work their rejected condensed milk into caramels and candies. Since butyric acid is used in the preparation of butyric ether which in turn serves as a flavoring substance for confections, it is possible that they do purchase butyric acid for this purpose.

In order to prove the above explanation regarding the volatile fatty acids experimentally, we conducted a series of analyses

¹—Richmond: Dairy Chemistry, p. 35.

to determine the Reichert Meissl number, iodine number, melting point of butter-fat and of insoluble fatty acids in evaporated milk. The results are shown in Table II.

TABLE II.
Showing Composition of Milk Fats in Evaporated Milk.

Date of Manufacture	Reichert Meissl Number	Iodine Number	Melting Point of Mixed Fats	Melting Point of Insoluble Fatty Acids
August, 1908.....	28.48	33.64	33.3° C.	41.0° C.
November, 1908..	29.52	33.60	33.4° C.	41.2° C.

The following are considered about the extremes and the averages of the above factors in pure butter-fat:

	Reichert Meissl Number	Iodine Number
Minimum	24	25.7
Maximum	32	37.9
Average	28	33.3

A comparison of the composition of the facts in the evaporated milk as recorded in Table II clearly shows that there is nothing abnormal in the chemical make-up of the latter. On the contrary, the Reichert Meissl number and, therefore, the per cent. of volatile fatty acids found, compares very well with the average Reichert Meissl number of pure butter-fat. The iodine number also is practically the same as the average iodine number in pure butter-fat. It might be suggested that it is a trifle low for that time of the year. This can be readily explained, however, by the fact that the summer of 1908 was exceptionally dry. The pastures gave out early in the season and necessitated the feeding of hay in the majority of dairies. This absence of succulent feed undoubtedly caused a decrease in the per cent. of olein as indicated by the iodine number.

To further illustrate the normality of the composition of the fats found in the evaporated milk, analyses of the pure fats of butter made at the Purdue creamery, located only about 30 miles from the condensing factory whose product is referred to in Table II, are given below. This butter, however, was made in 1907.

TABLE III.
Showing Composition of Milk Fats in Butter.

Month of year—1907	Reichert Meissl Number	Iodine Number	Melting Point of Mixed Fats
July	28.90	37.06	31.9
August	27.13	38.99	32.1
September	27.19	35.36	33.0
October	26.54	34.28	32.8
November 9.....	27.51	33.07	32.9
November 23....	29.22	28.23	34.0
December 22....	29.75	31.55	33.5

The above table shows, with the exception of the iodine number, there is practically no difference between the fats in butter and condensed milk. The difference in the iodine number may reasonably be assumed to be due to the dry summer of 1908.

The facts brought out in this chapter can leave no doubt as to the presence of the normal amount of volatile fats in evaporated milk. The volatile fats, therefore, do not escape during the process of manufacture.

EXPERIMENTS WITH THE BABCOCK TEST AND GRAVIMETRIC FAT ESTIMATION.

In the previously described experiments the process of manufacture was subjected to a most rigid investigation, the milk was under the investigator's supervision from the time it entered the factory till it was sealed up in the tin cans, every step of the process received especial attention, and no loss of fat could be located. The pounds of fat in the fresh milk was determined on the basis of the pounds of milk and per cent. of fat. The pounds of fat, divided by the pounds of condensed milk made and the quotient multiplied by one hundred gives the per cent. of fat in the condensed milk. In spite of all precautions, the per cent. of fat thus calculated was always higher than that determined by the Babcock test and by the ether extraction.

Although our repeated analyses and tests of the same sample gave uniform results, and, though the ether extraction checked up fairly close with the Babcock test, there was no uniformity of results of the fat estimations made in different laboratories. It was, therefore, thought expedient to subject both, the Babcock test and the ether extraction method to careful study relative to their accuracy in estimating the per cent. of fat in unsweetened evaporated milk.

THE BABCOCK TEST.
AMOUNT OF SULPHURIC ACID USED.

The physical make-up of the evaporated milk is materially changed by exposure to the high temperatures of the process. The casein is precipitated into insoluble curd. This may not be noticeable to the naked eye, as the manufacturer may have succeeded in so thoroughly emulsifying the contents of the cans by mechanical shaking that the evaporated milk presents a smooth and homogeneous, creamy appearance. Nevertheless the casein has lost some of its original physical properties; it is precipitated and, though finely divided, is more difficultly acted upon by solvents.

When the casein precipitates, each particle of curd locks up or envelopes a part of the butter-fat. In order to liberate this butter-fat it is necessary to completely dissolve the curd.

It was therefore, thought probable that the curd was not all dissolved by the addition to the test bottle of the usual amount (17.5 c.c.) of sulphuric acid, and that the use of more acid might improve the accuracy of the results by more completely dissolving the curd, and thus increase the test. The results are shown in Table IV.

TABLE IV.
Effect of Amount of Sulphuric Acid on Per Cent. of Fat and Clearness of Test.

Calculated Per cent. Fat	17.5 c. c. Acid			20 c. c. Acid			15 c. c. Acid		
	Test		Clearness	Test		Clearness	Test		Clearness
	Reading	Per cent. Fat		Reading	Per cent. Fat		Reading	Per cent. Fat	
8.7	4.	8.	sediment			very bad	3.9	7.8	sediment
8.7	4.	8.	sediment	4.	8.	charred	4.	8.	sediment
8.7	4.	8.	clear	4.	8.	charred	4.	8.	sediment
8.7	4.	8.	charred	4.	8.	charred	4.1	8.2	sediment
8.7	4.1	8.2	charred	3.8	7.6	charred	4.	8.	clear
8.7	4.1	8.2	charred	4.	8.	charred	4.1	8.2	sediment
8.7	4.	8.	clear	3.9	7.8	charred	4.	8.	sediment
8.7	4.1	8.2	charred	3.8	7.6	clear	4.	8.	sediment
8.7	4.1	8.2	charred	3.8	7.6	charred			
8.7	4.	8.	clear	3.6	7.2	charred			
8.7	4.	8.	clear	4.	8.	charred			
8.7	4.	8.	sediment	3.8	7.6	charred			
8.7	4.	8.	sediment	3.8	7.6	charred			
8.7		8.06			7.75			8.03	
Av.		Av.			Av.			Av.	

In the experiments tabulated above the evaporated milk was diluted with equal parts (by weight) of water. Milk from one and the same batch was used in the entire experiment. The calculated per cent. of fat in the evaporated milk was determined by weighing and testing the fresh milk used and by weighing the condensed milk manufactured from it, as well as by multiplying the per cent. of fat in the fresh milk by the ratio of concentration as determined by the estimation of the per cent. of milk solids in the fresh milk and in the condensed milk.

The results show that, where the normal amount (17.5 c.c.) of acid was used, the tests were fairly uniform but low. In only a few cases was there a really clear test, making accurate reading difficult.

Where 20 c.c. of acid were used the tests were so badly charred that accurate reading was practically impossible. This explains probably the greater fluctuations in the per cent. of fat of the individual tests and the low average per cent. of fat.

Where only 15 c.c. of acid were used a curdy sediment appeared in almost every case, again making the tests unreliable, though no charred masses clouded the fat. The per cent. of fat was fairly uniform and the difference between it and the calculated per cent. of fat was practically the same as where 17.5 c.c. of acid were used.

The accuracy of the test can, therefore, not be improved by changing the amount of sulphuric acid.

TIME REQUIRED FOR COMPLETE DIGESTION OF CURD BY ACID.

Since an increase in the amount of acid used to facilitate the solution of the curd did not prove satisfactory, it was thought possible that longer exposure of the evaporated milk to the action of the acid might serve the purpose. It is well known that, in the testing of rich cream, the test often comes out curdy. This can easily be prevented by setting the bottles aside for five to 15 minutes before whirling. This gives the acid a chance to digest the curd more completely.

Table V shows the results of experiments in which the whirling of the test bottles containing the evaporated milk and acid was delayed from one to 24 hours.

TABLE V.

Showing Effect of Time of Exposure of Milk to Acid Before Placing the Test Bottles in Centrifuge.

Calculated Per cent. Fat	Time Between Addition of Acid and First Whirling									
	0		1 Hour		4 Hours		8 Hours		24 Hours	
	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat
8.7	4.	8.	4.	8.	3.9	7.8	4.1	8.2	4.35	8.7
8.7	4.1	8.2	4.1	8.2	4.	8.	4.1	8.2	4.35	8.7
8.7	4.1	8.2	4.	8.	4.	8.	4.1	8.2	4.3	8.6
8.7	4.	8.	4.	8.	3.9	7.8	4.1	8.2	4.25	8.5
8.7	4.1	8.2	4.	8.	4.	8.	4.05	8.1	4.35	8.7
8.7	4.05	8.1	4.15	8.3	4.1	7.2	4.05	8.1	4.35	8.7
8.7	4.	8.	4.	8.	3.9	7.8	4.1	8.2	4.35	8.7
8.7	4.	8.	4.	8.	4.	8.	4.1	8.2	4.3	8.6
8.7	4.	8.			4.	8.	4.1	8.2	4.3	8.6
8.7	4.	8.			3.9	7.8	4.1	8.2	4.25	8.5
8.7	4.1	8.2			4.1	8.2	4.1	8.2	4.2	8.4
8.7	4.1	8.2			4.	8.	4.1	8.2	4.25	8.5
8.7	4.	8.							4.3	8.6
8.7	4.	8.							4.25	8.5
8.7 Av.		8.08 Av.		8.06 Av.		7.9 Av.		8.18 Av.		8.6 Av.

The results shown in the above table were obtained by using evaporated milk from the same batch for all the tests. The calculated per cent. of fat was determined as explained under Table IV. The evaporated milk was diluted, equal parts, by weight, of milk and water. Before whirling, the bottles were set in water at 160 degrees F. for 15 minutes.

These figures illustrate the fact that prolonged exposure of the milk in the test bottles to the acid causes a higher test. Where the test was held 24 hours before whirling the per cent. of fat increased to nearly that calculated as per above directions. Holding the bottles for only one, four and eight hours did not appreciably influence the per cent. of fat.

The tests made after standing four, eight and 24 hours were freer from admixture of black, charred masses than the tests made at once, but considerable sediment adhered to the bottom of the fat column, which interfered with the accuracy of the reading.

The distinct increase in the test after standing for 24 hours before whirling suggests very strongly that a more complete solution of the curd than is affected in the ordinary Babcock method, is necessary in order to free the fat sufficiently so as to obtain correct results. Unfortunately, the method of giving the action of the acid more time is, under most conditions, not practical, and, therefore, not satisfactory. Next to its accuracy, the great advantage of the Babcock test of milk and milk products lies in its rapidity. The method used in this experiment, though reasonably satisfactory concerning accuracy of results, cannot be recommended for general use.

EFFECT OF THE USE OF SOLVENTS BEFORE ACID IS ADDED.

It was shown in the previous pages that the physical condition of curd in the evaporated milk is such that all of the fat cannot be extracted with the Babcock method for milk and milk products. It was further shown that, by giving the acid about 24 hours to act upon and dissolve the curd before whirling, the digestion of the curd is complete enough to extract practically all of the fat and thus to obtain a reasonably accurate test.

With a view to avoiding the objectionable time element, it was thought that the addition of solvents to the diluted evaporated milk in the test bottle before the addition of acid might prepare the curd so as to be more readily digested by the acid and to give the correct test without delaying the whirling.

The two solvents used were borax and potassium hydrate. Both of these compounds are capable of readily dissolving the curd. The results are tabulated in Table VI.

TABLE VI.

Showing Effect of Addition to Milk of Borax or Potassium Hydrate Before Acid is Added.

Calculated Per cent. Fat	Ordinary Method			Solution of Borax			Solution of Potassium Hydrate		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
8.7	4.	8.	sediment	4.2	8.4	sediment	4.1	8.2	sediment
8.7	4.	8.	sediment	4.2	8.4	sediment	4.	8.	sediment
8.7	4.	8.	sediment	4.15	8.3	sediment	4.2	8.4	sediment
8.7	4.	8.	clear	4.25	8.5	clear	4.1	8.2	sediment
8.7	4.1	8.2	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	4.1	8.2	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	3.9	7.8	sediment	4.2	8.4	sediment	4.	8.	sediment
8.7	4.	8.	sediment	4.2	8.4	sediment	4.	8.	sediment
8.7	3.9	7.8	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	3.9	7.8	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	4.	8.	sediment	4.3	8.6	sediment	4.05	8.1	sediment
8.7	4.	8.	clear	4.2	8.4	sediment	3.9	7.8	sediment
8.7	3.9	7.8	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	4.1	8.2	clear	4.25	8.5	sediment	4.1	8.2	sediment
8.7	4.1	8.2	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	2.8	7.6	sediment	4.25	8.5	sediment	4.	8.	sediment
8.7	4.	8.	sediment	4.25	8.5	sediment	3.9	7.8	sediment
8.7	4.	8.	sediment	4.2	8.4	sediment	3.8	7.6	sediment
8.7				4.25	8.5	sediment	4.1	8.2	sediment
8.7				4.25	8.5	sediment	4.	8.	sediment
8.7				4.25	8.5	sediment	4.	8.	sediment
8.7				4.2	8.4	sediment	4.	8.	sediment
8.7				4.2	8.4	sediment	4.05	8.1	sediment
8.7				4.25	8.5	sediment	4.	8.	sediment
8.7 Av.		7.98 Av.			8.46 Av.			8.03 Av.	

In the case of the addition of borax, 5 c.c. of a one per cent. solution (about .05 grams borax) were poured into each test bottle before the acid was added. In the case of the tests with potassium hydrate, 5 c.c. of a one per cent. solution of potassium hydrate, (about .05 grams KOH) were poured into each bottle before the acid was added. The bottles were allowed to stand for about five minutes, giving the solvents time to act on the curd. Then the regular amount of acid (17.5 c.c. H_2SO_4) was added and the test completed in the usual way.

The tests with the borax averaged considerably higher than where borax was not used, but did not quite reach the calculated per cent. of fat. The tests with the potassium hydrate showed no appreciable difference over the ordinary Babcock tests. The use of either of these solvents was unsatisfactory in-as-much as the fat was very cloudy and charred, interfering seriously in reading.

EFFECT OF DILUTION OF EVAPORATED MILK ON ACCURACY OF TEST.

So far, in all the tests the evaporated milk was diluted with equal parts of water, then 18 grams of this diluted milk was weighed into the test bottles. Since the exposure of the tests for 24 hours to the action of the acid before whirling resulted in a higher test, it was thought possible that a greater dilution of the evaporated milk might facilitate the action of the acid with similar results. Experiments were, therefore, conducted in which different degrees of dilutions were used. It was soon found, however, that, when the dilution went beyond one-fourth (one part evaporated milk to three parts of water by weight), the results were not satisfactory, because of the multiplication of the possible error in calculating the per cent. of fat. Solutions less dilute than a one-fourth dilution (one part of evaporated milk to three parts of water by weight) gave too low results. One-fourth dilutions, however, increased the reading so that the per cent. of fat obtained was practically equal to the calculated per cent. of fat. In Table VII are recorded the results of experiments with different dilutions.

TABLE VII.

Showing Effect of Dilution of Evaporated Milk on the Accuracy of the Test.

Calculated Per cent. Fat	Dilution 1:2			Dilution 1:3			Dilution 1:4		
	Reading	Per cent. Fat	Per cent. Short- age	Reading	Per cent. Fat	Per cent. Short- age	Reading	Per cent. Fat	Per cent. Short- age
8.7	4.	8.	.7	2.8	8.4	.3	2.2	8.8	—1
8.7	4.	8.	.7	2.8	8.4	.3	2.2	8.8	—1
8.7	4.	8.	.7	2.75	8.25	.45	2.	8.	.7
8.7	4.	8.	.7	2.8	8.4	.3	2.1	8.4	.4
8.7	4.1	8.2	.5	2.7	8.1	.6	1.9	7.6	1.2
8.7	4.1	8.2	.5	2.85	8.55	.15	2.2	8.8	—1
8.7	3.9	7.8	.9	2.8	8.4	.3	2.15	8.6	.2
8.7	4.	8.	.7	2.85	8.55	.15	2.2	8.8	—1
8.7	3.9	7.8	.9	2.6	7.8	.9	2.2	3.8	—1
8.7	3.9	7.8	.9	2.8	8.4	.3	2.2	8.8	—1
8.7	4.	8.	.7	2.8	8.4	.3	2.2	8.8	—1
8.7	4.	8.	.7	2.8	8.4	.3	2.2	8.8	—1
8.7	3.9	7.8	.9	2.8	8.4	.3	2.15	8.6	.2
8.7	4.1	8.2	.5	2.75	8.25	.45	2.2	8.8	—1
8.7	4.1	8.2	.5	2.8	8.4	.3	2.2	8.8	—1
8.7	3.8	7.6	1.1	2.75	8.25	.45	2.15	8.6	.2
8.7	4.	8.	.7	2.8	8.4	.3	2.15	8.6	.2
8.7	4.	8.	.7	2.8	8.4	.3	2.15	8.6	.2
8.7		7.98	.72		8.34	.36		8.6	.13
Av.		Av.	Av.		Av.	Av.		Av.	Av.

The results tabulated in Table VII show that tests of a one-fourth dilution increased the per cent. of fat .6 per cent. to .7 per cent. in the evaporated milk under experiment. This increase made the tests practically correspond with the calculated per cent. of fat.

It must be stated, however, that, in the case of all of the various dilutions, many of the tests were not clear and caused difficulty in reading. This explains the fluctuations in the results. The uniformity of the results, however, left no doubt as to the ability of this one-fourth dilution method to yield correct results, provided that the reading is clear.

EFFECT OF USE OF WEAK ACID INSTEAD OF WATER AFTER THE FIRST WHIRLING.

The results in the previous paragraphs show that a correct test can be made by diluting one part of evaporated milk with three parts of water. They further show that, in the case of every method tried, a large number of tests are not clear; either the fat is mixed with charred masses, or there is a layer of curdy sediment at the bottom of the fat column, or both. Tests of this kind are very unsatisfactory, as they leave the operator in doubt as to how to read the fat column. He does not know whether the black and curdy layer should be included or not. The result is that the reading of the fat column is largely guess work, and the correct interpretation of the results is accidental rather than regular.

The cause of the precipitation of these curdy and charred masses was, therefore, carefully studied. It was observed that the mixture of diluted condensed milk and acid remained in apparent solution up to the time the hot water is added after the first whirling. After the addition of hot water the precipitation seemed to appear. Though the tests were made with milk from the same can, and as far as noticeable, under identical conditions as to degree of dilution, amount of acid, amount of milk, temperature of milk, acid and water, etc., there was no uniformity in the clearness of the tests. Some tests showed a very heavy precipitation, the charred masses making accurate reading impossible; in some tests there was a deep layer of curdy sediment at the bottom of the fat column; in others this layer was slight, and a few tests were entirely clear. On the average about five out of every six tests were charred and contained sediment and some were so bad that they could not be read at all.

Since the addition of hot water seemed to be responsible for this precipitation, experiments were made in which the addition of hot water after the first whirling was omitted. Instead of the water, weak sulphuric acid was used. Before adding the acid it was diluted with equal volumes of water, in order to make its strength correspond with the strength of the acid and milk mixture in the bottle. By mixing the water and the acid just before using it, the mixture can be added hot without additional heating, owing to the intense evolution of heat when sulphuric acid comes in contact with water. No precipitation appeared when the hot diluted acid was added after the first whirling. Then the tests were completed in the usual way, adding hot water after the second whirling. The results are recorded in Table VIII and illustrated in Figs. 1, 2, 3 and 4.

TABLE VIII.

Showing Effect of Addition of Weak Acid In the Place of Water After First Whirling.

Reading.	Clearness.	Reading.	Clearness.
2.2	clear	2.2	clear
2.2	clear	2.2	clear
2.2	clear	2.2	clear
2.2	clear	2.2	clear
2.2	clear	2.2	clear
2.2	clear	2.15	clear
2.2	clear	2.2	clear
2.2	clear	2.15	clear
2.15	clear	2.15	clear
2.2	clear	2.15	clear
2.15	clear	2.2	clear
2.2	clear	2.2	clear
2.2	clear	2.15	clear
2.15	clear	2.15	clear
2.2	clear	2.15	clear
2.2	clear	2.15	clear
2.15	clear	2.15	clear
2.2	clear	2.2	clear

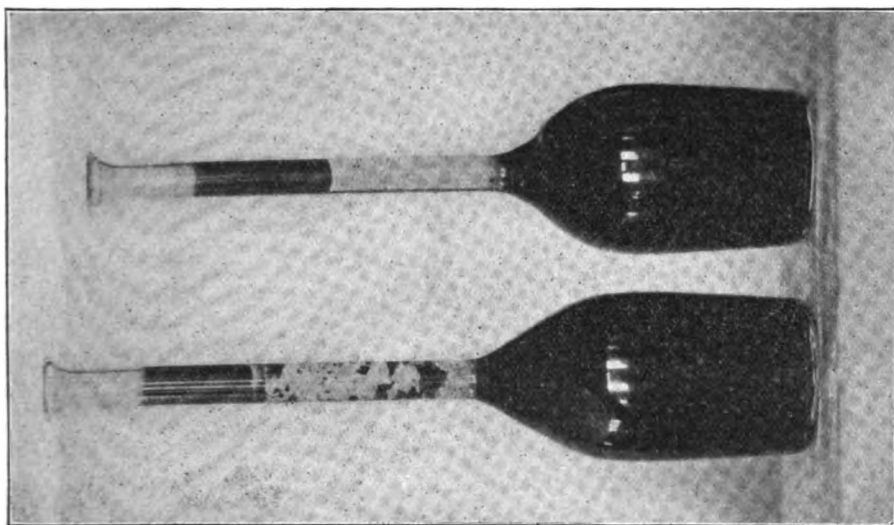


Fig. 2. Dilution of evaporated milk = 1 : 2.
Dilute acid used after the first whirling.

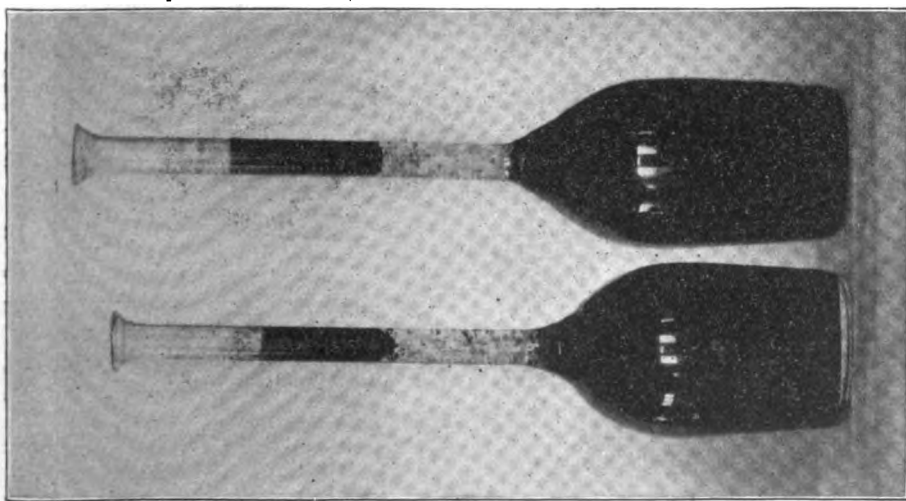


Fig. 2. Dilution of evaporated milk = 1 : 2.
The test was made in the ordinary way.

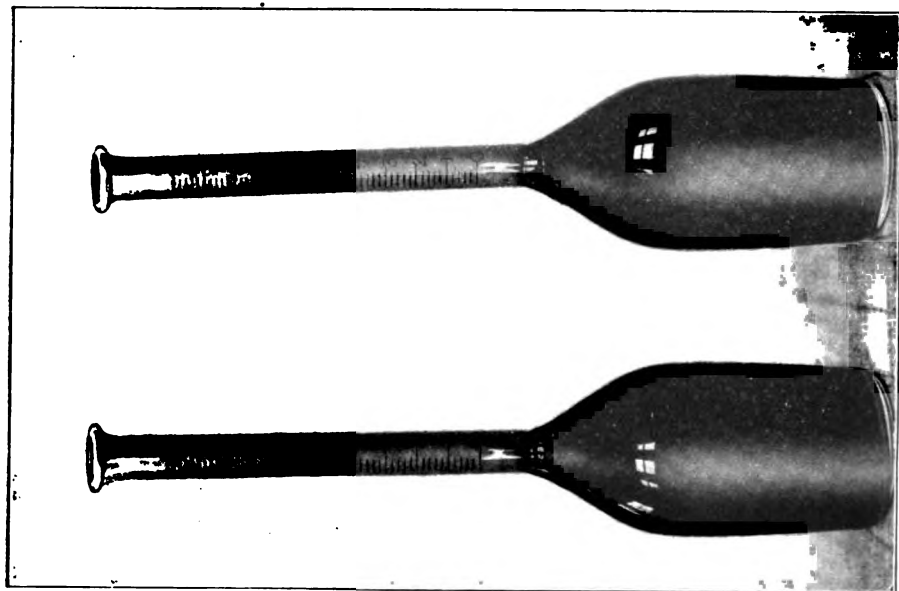


Fig. 5. Dilution of evaporated milk = 1 : 4.
Dilute acid was used after the first whirling.

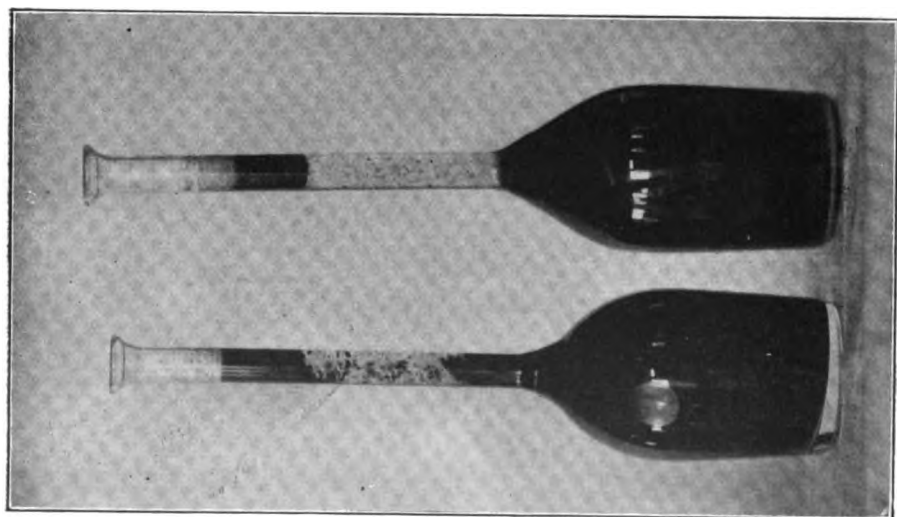


Fig. 4. Dilution of evaporated milk = 1 : 4.
The test was made in the ordinary way.

The tests recorded in Table VIII were all made with the same lot of condensed milk. This was done in order to avoid needless details and duplication of work already done, and to subject the experiment to more uniform conditions. The results leave no doubt as to the success of this modification. All the tests were as clear as, if not clearer than tests of fresh milk. The fat in each and every bottle was entirely free from cloudiness, black, charred masses and curdy sediment. They further show remarkable uniformity in the per cent. of fat; in no case did the reading vary more than .05 per cent. It is obvious that, when the fat column is perfectly clear and its surface and bottom are well defined, there can be but one reading and that must be the correct one.

RESULTS OF THE MODIFIED BABCOCK TEST OF DIFFERENT BRANDS OF EVAPORATED MILK.

In order to bring out more conclusively the merits and uniformity of results by the modified Babcock test above described (one-fourth dilution of evaporated milk and addition of diluted acid after the first whirling), a series of comparative tests was conducted. In these tests samples from different milk condensing concerns were used. The results are shown in the following tables:

TABLE IX.
Showing Effect of Old and New Method of Testing on Clearness and Accuracy of Tests of Different Brands of Evaporated Milk.

Brand and Name of Manufacturer	One-Half Dilution					One-Fourth Dilution				
	Old Method			Diluted Acid Added after First Whirling		Old Method			Diluted Acid Added after First Whirling	
	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat
"Monarch" Reid- Murdock Co.	4.4	8.8	sediment	4.55	9.1	2.4	9.6	sediment	2.4	9.6
	4.4	8.8	sediment	4.6	9.2	2.35	9.4	sediment	2.4	9.6
	4.5	9.	clear	4.5	9.	2.4	9.6	sediment	2.4	9.6
	4.4	8.8	clear	4.5	9.	2.4	9.6	sediment	2.4	9.6
	4.35	8.7	sediment	4.5	9.	2.35	9.4	sediment	2.4	9.6
	4.4	8.8	sediment	4.5	9.	2.4	9.6	sediment	2.4	9.6
Average		8.82			9.07		9.52			9.6
"Wilson's" Indiana Condensed Milk Co. November Milk	4.	8.	sediment	.....	.....	2.2	8.8	clear	2.15	8.6
	4.1	8.2	clear	.....	.....	2.2	8.8	clear	2.2	8.8
	4.	8.	sediment	.....	.....	2.	8.	sediment	2.2	8.8
	3.9	7.8	sediment	.....	.....	2.1	8.4	sediment	2.2	8.8
	4.	8.	sediment	.....	.....	1.9	7.6	sediment	2.2	8.8
	4.	8.	clear	.....	.....	2.2	8.8	clear	2.2	8.8
Average		8.					8.4			8.77

TABLE IX—Continued.

Brand and Name of Manufacturer	One-Half Dilution				One-Fourth Dilution			
	Old Method		Diluted Acid Added after First Whirling		Old Method		Diluted Acid Added after First Whirling	
	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat
"Van Camp's" VanCamp's Packing Co.	3.25	6.5	sediment	3.3	6.6	sediment	1.7	6.8
	3.3	6.6	sediment	3.2	6.4	sediment	1.7	6.8
	3.3	6.6	sediment	3.35	6.7	sediment	1.65	6.7
	3.3	6.6	clear	3.3	6.6	sediment	1.7	6.8
	3.25	6.5	sediment	3.3	6.6	sediment	1.65	6.7
	3.2	6.4	clear	3.3	6.6	sediment	1.7	6.8
Average		6.53			6.58			6.74
"Pet" Helvetia Milk Condensing Co.	4.5	9.	sediment	4.3	8.6	clear	2.35	9.4
	4.4	8.8	sediment	4.35	8.7	sediment	2.3	9.2
	4.4	8.8	sediment	4.4	8.8	clear	2.3	9.2
	4.4	8.8	sediment	4.35	8.7	clear	2.25	9.4
	4.4	8.8	sediment	4.4	8.8	clear	2.3	9.2
	4.4	8.8	sediment	4.3	8.7	clear	2.35	9.4
Average		8.83			8.72			9.3

TABLE IX—Continued.

Brand and Name of Manufacturer	One-Half Dilution					One-Fourth Dilution				
	Old Method			Diluted Acid Added after First Whirling		Old Method			Diluted Acid Added after First Whirling	
	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat
(No label on can)	3.25	6.5	sediment	3.2	6.4	1.7	6.8	sediment	1.75	7.
	3.25	6.5	sediment	3.2	6.4	very bad	very bad	sediment	1.75	7.
	3.3	6.6	sediment	3.25	6.5	1.8	7.2	sediment	1.75	7.
	3.3	6.6	sediment	3.2	6.4	1.75	7.	sediment	1.65	6.6
	3.3	6.6	sediment	3.2	6.4	1.7	6.8	sediment	1.75	7.
	3.2	6.4	sediment	3.3	6.6	1.6	6.4	sediment	1.7	6.8
Average		6.53			6.45		6.84			6.9
"Peerless" Borden's Condensed Milk Co.	4.3	8.6	sediment	4.3	8.4	2.25	9.	sediment	2.3	9.2
	4.4	8.8	sediment	very bad	very bad	2.2	8.8	sediment	2.3	9.2
	4.3	8.6	sediment	4.2	8.4	2.3	8.8	sediment	2.3	9.2
	4.15	8.3	sediment	4.2	8.4	2.25	9.	sediment	2.25	9.
	4.2	8.4	sediment	4.15	8.3	2.3	9.2	sediment	2.2	8.8
	4.2	8.4	sediment	4.25	8.5	2.25	9.	sediment	2.25	9.
Average		8.52			8.4		8.97			9.1

TABLE IX—Continued.

Brand and Name of Manufacturer	One-Half Dilution					One-Fourth Dilution				
	Old Method			Diluted Acid Added after First Whirling		Old Method			Diluted Acid Added after First Whirling	
	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat	Read- ing	Per cent. Fat	Clearness	Read- ing	Per cent. Fat
"Wilson's" Indiana Condensed Milk Co. September Milk	unable to read	7.6	sediment	3.7	7.4	unable to read	8.	sediment	2.05	8.2
	3.8	7.6	sediment	4.	8.	2.	1.95	fair	2.05	8.2
	3.8	7.6	sediment	3.85	7.7	1.95	7.8	fair	2.	8.
	3.9	7.8	sediment	3.85	7.7	2.	8.	sediment	2.	8.
	unable to read	7.8	sediment	3.9	7.8	unable to read	8.2	clear	2.1	8.4
	3.8	7.6	clear	3.85	7.7	2.05	8.2	clear	2.05	8.2
Average		7.65			7.72		8.			8.17

TABLE X.

Showing Effect of Old and New Methods of Testing on Clearness and Accuracy of Tests of Different Brands of Evaporated Milk.

Brand and Name of Manufacturer	One-Half Dilution			One-Fourth Dilution		
	Old Method			Diluted Acid Added after First Whirling		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
"Pet" Helvetia Milk Condensing Co.	4.35	8.7	irregular and charry	2.3	9.2	clear
			" "	2.3	9.2	clear
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.35	9.4	clear
	4.4	8.8	" "	2.3	9.2	clear
			" "	2.4	9.6	clear
	4.3	8.6	" "	2.4	9.6	clear
			" "	2.35	9.4	clear
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.3	9.2	clear
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.4	9.6	clear
			" "	2.3	9.2	clear
			" "	2.3	9.2	clear
			" "	2.4	9.6	clear
			" "	2.3	9.2	clear
			" "	2.3	9.2	clear
Average		8.75			9.37	
"Peerless" Borden's Condensed Milk Co.	4.4	8.8	irregular and charry	2.4	9.6	clear
			" "	2.3	9.2	clear
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.35	9.4	clear
	4.3	8.6	" "	2.4	9.6	clear
			" "	2.35	9.4	sediment
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.4	9.6	clear
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.3	9.2	clear
	4.4	8.8	" "	2.4	9.6	clear
			" "	2.4	9.6	clear
			" "	2.4	9.6	clear
			" "	2.4	9.6	clear
			" "	2.3	9.2	clear
			" "	2.35	9.4	clear
			" "	2.4	9.6	clear
			" "	2.4	9.6	clear
Average		8.77			9.5	

TABLE X.—Continued.

Brand and Name of Manufacturer	One-Half Dilution			One-Fourth Dilution		
	Old Method			Diluted Acid Added after First Whirling		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
"Van Camp's" Van Camp's Packing Co.	3.5	7.	irregular and charry	1.9	7.6	clear
	very bad			1.9	7.6	clear
	3.4	6.8	" "	1.8	7.2	clear
	3.5	7.	" "	1.85	7.4	clear
	3.4	6.8	" "	1.9	7.6	clear
	3.5	7.	" "	1.8	7.2	clear
				1.8	7.2	clear
				1.8	7.2	clear
				1.8	7.2	clear
				1.85	7.4	clear
				1.8	7.2	clear
				1.85	7.4	clear
				1.85	7.4	clear
				1.85	7.4	clear
				1.9	7.6	clear
				1.8	7.2	clear
				1.8	7.2	clear
				1.9	7.6	clear
Average		6.9			7.37	

TABLE XI.

Showing Average Results of a Large Number of Tests Each of Various Brands with Old and New Methods.

BRAND	Old Method Per Cent. Fat	New Method Per Cent. Fat	Difference
"Peerless", Borden's Condensed Milk Co.....	8.5	9.1	.6
No label on can.....	6.5	6.9	.4
"Pet", Helvetia Milk Condensing Co.	8.8	9.3	.5
"Van Camp's", Van Camp's Packing Co.	6.5	6.7	.2
"Wilson's", Indiana Condensed Milk Co.....	8.	8.8	.8
"Monarch", Reid-Murdock Co.	8.8	9.6	.8
"Pet", Helvetia Milk Condensing Co.	8.7	9.4	.7
"Peerless", Borden's Condensed Milk Co.....	8.8	9.5	.7
"Van Camp's", Van Camp's Packing Co.	6.9	7.4	.5
"Wilson's", Indiana Condensed Milk Co.....	7.6	8.2	.6
Average	7.91	8.49	.58

EFFECT OF CONCENTRATION OF EVAPORATED MILK ON ACCURACY OF BABCOCK TEST.

Careful observations in testing different brands of condensed milk from various companies using different methods of processing indicated that the loss of fat with the ordinary Babcock test varied considerably with the different brands. This difference is undoubtedly partly due to the method of manufacture, but the results also suggest that the concentration of the product itself may materially influence the test. In order to bring out this fact more clearly, milk was condensed to different degrees of concentration and then tested with the old and new methods and the results compared with the calculated per cent. of fat. The summary of these tests is shown in Tables XII and XIII.

TABLE XII.

Showing Effects of Concentration of Evaporated Milk on Accuracy and Clearness of Babcock Test With Old and New Methods.

Degree of Concentration	Old Method			New Method		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
Evaporated Milk Manufactured in June.						
1.61:1		unable to read		1.65	6.6	clear
	3.1	6.2	sediment	1.6	6.4	clear
	3.1	6.2	clear	1.7	6.8	clear
	3.2	6.4	clear	1.7	6.8	clear
	3.1	6.2	sediment	1.65	6.6	clear
		unable to read		1.6	6.4	clear
Average		6.25			6.6	
1.96:1	3.6	7.2	fair	2.	8.	clear
	3.5	7.	sediment	1.95	7.8	clear
	3.6	7.2	sediment	2.	8.	clear
	3.5	7.	sediment	2.	8.	clear
	3.6	7.2	sediment	1.95	7.8	clear
	3.5	7.	sediment	2.	8.	clear
Average		7.1			7.93	
2:1		unable to read		1.95	7.8	clear
	3.6	7.2	sediment	1.95	7.8	clear
		unable to read		2.	8.	clear
	3.5	7.	sediment	2.	8.	clear
	3.6	7.2	sediment	2.	8.	clear
	3.5	7.	sediment	1.95	7.8	clear
Average		7.1			7.9	
2.21:1	3.8	7.6	sediment	2.15	8.6	clear
	3.8	7.6	sediment	2.15	8.6	clear
		unable to read		2.2	8.8	clear
		unable to read		2.15	8.6	clear
		unable to read		2.2	8.8	clear
		unable to read		2.15	8.6	clear
Average		7.6			8.67	

TABLE XII.—(Continued.)

Degree of Concentration	Old Method			New Method		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
Evaporated Milk Manufactured in June.						
2.52:1	unable to read			2.4	9.6	clear
	unable to read			2.4	9.6	clear
	unable to read			2.35	9.4	clear
	unable to read			2.35	9.4	clear
	unable to read			2.4	9.6	clear
	unable to read			2.35	9.4	clear
Average					9.5	
Evaporated Milk Manufactured in August.						
1.94:1	3.4	6.8	clear	1.9	7.6	clear
	3.4	6.8	clear	1.9	7.6	clear
	3.5	7.	clear	1.8	7.2	clear
	3.5	7.	clear	1.8	7.2	clear
	2.35	6.7	clear	1.8	7.2	clear
	3.4	6.8	clear	1.8	7.2	clear
Average		6.85			7.3	
2.11:1	3.7	7.4	clear	1.9	7.6	clear
	3.75	7.5	clear	2.	8.	clear
	3.7	7.4	clear	1.9	7.6	clear
	3.7	7.4	sediment	1.9	7.6	clear
	3.8	7.6	sediment	2.	8.	clear
	3.7	7.4	sediment	1.95	7.8	clear
Average		7.4			7.8	
2.21:1	3.9	7.8	sediment	2.1	8.4	clear
	3.9	7.8	sediment	2.05	8.2	clear
	3.8	7.6	sediment	2.	8.	clear
	3.8	7.6	sediment	2.05	8.2	clear
	3.8	7.6	sediment	2.1	8.4	clear
	3.9	7.8	sediment	2.1	8.4	clear
Average		7.7			8.27	

TABLE XII.—(Continued.)

Degree of Concen- tration	Old Method			New Method		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
Evaporated Milk Manufactured in August.						
2.33:1	4.	8.	sediment	2.3	9.2	clear
	4.2	8.2	sediment	2.3	9.2	clear
	4.3	8.6	sediment	2.3	9.2	clear
	4.1	8.2	sediment	2.3	9.2	clear
	4.1	8.2	sediment	2.3	9.2	clear
	4.3	8.6	sediment	2.3	9.2	clear
Average		8.3			9.2	
2.51:1	4.3	8.6	sediment	2.35	9.4	clear
	4.4	8.8	sediment	2.35	9.4	clear
	4.3	8.6	sediment	2.35	9.4	clear
	4.3	8.6	sediment	2.35	9.4	clear
	4.3	8.6	sediment	2.35	9.4	clear
	4.3	8.6	sediment	2.35	9.4	clear
Average		8.63			9.4	
Evaporated Milk Manufactured in November.						
1.58:1	3.6	7.2	sediment	1.75	7.	clear
	3.5	7.	clear	1.75	7.	clear
	3.35	6.7	sediment	1.8	7.2	clear
	3.5	7.	clear	1.8	7.2	clear
	3.5	7.	sediment	1.8	7.2	clear
	3.4	6.8	sediment	1.8	7.2	clear
Average		6.95			7.13	
1.74:1	3.8	7.6	sediment	2.	8.	clear
	3.9	7.8	clear	2.	8.	clear
	3.8	7.6	sediment	1.95	7.9	clear
	3.9	7.8	sediment	1.95	7.9	clear
	3.85	7.7	sediment	1.95	7.9	clear
	3.9	7.8	sediment	1.9	7.8	clear
Average		7.72			7.92	

TABLE XII.—(Continued.)

Degree of Concen- tration	Old Method			New Method		
	Reading	Per cent. Fat	Clearness	Reading	Per cent. Fat	Clearness
Evaporated Milk Manufactured in November.						
1.9:1	4.2	8.4	fair	2.2	8.8	clear
	4.	8.	sediment	2.15	8.6	clear
	4.1	8.2	fair	2.2	8.8	clear
	4.1	8.2	sediment	2.2	8.8	clear
	4.	8.	fair	2.2	8.8	cherry
	4.1	8.2	sediment	2.15	8.6	clear
Average		8.17			8.73	
1.99:1	4.2	8.4	sediment	2.2	8.8	clear
	4.4	8.8	sediment	2.3	9.2	clear
	4.5	9.	sediment	2.3	9.2	clear
	4.3	8.6	sediment	2.2	8.8	clear
	4.4	8.8	sediment	2.25	9.	clear
	4.4	8.8	sediment	2.2	8.8	clear
Average		8.73			8.97	
2.11:1	4.6	9.2	sediment	2.45	9.8	clear
	4.6	9.2	sediment	2.4	9.6	clear
	4.6	9.2	sediment	2.4	9.6	clear
	4.55	9.1	clear	2.3	9.2	clear
	4.4	8.8	clear	2.4	9.6	clear
	4.6	9.2	sediment	2.45	9.8	clear
Average		9.12			9.6	
2.25:1	5.1	10.2	sediment	2.6	10.4	clear
	5.3	10.6	sediment	2.6	10.4	clear
	5.	10.	sediment	2.6	10.4	clear
	5.1	10.2	sediment	2.6	10.4	clear
	5.1	10.2	sediment	2.6	10.4	clear
	5.2	10.4	sediment	2.65	10.6	clear
Average		10.27			10.43	

TABLE XIII.

Summary Comparing Results of New and Old Methods of Testing with Calculated Per Cent. of Fat of Evaporated Milk of Various Degrees of Concentration.

Degree of Concentration	Calculated Per Cent. Fat	Old Method		New Method	
		Per cent. Fat	Shortage	Per cent. Fat	Shortage

Experiment with June Milk.

1.61:1		6.25		6.6	
1.96:1		7.1		7.93	
2.00:1		7.1		7.9	
2.21:1		7.6		8.67	
2.52:1	unable to read any sample			9.50	

Experiment with August Milk.

1.94:1	7.27	6.85	.42	7.3	.03+
2.11:1	7.91	7.4	.51	7.8	.09—
2.21:1	8.29	7.7	.59	8.27	.02—
2.33:1	8.84	8.3	.54	9.2	.36+
2.50:1	9.38	8.63	.75	9.4	.06+

Experiment with November Milk.

1.58:1	7.25	6.95	.30	7.13	.12—
1.74:1	7.98	7.72	.26	7.92	.06—
1.90:1	8.74	8.17	.57	8.73	.01—
1.99:1	9.14	8.73	.41	8.97	.17—
2.11:1	9.70	9.12	.58	9.6	.10—
2.25:1	10.35	10.27	.08	10.43	.08+

The results in Tables XII and XIII suggest that, exceptions reserved, the loss of fat with the old method increases as the degree of concentration increases. The data show considerable irregularity, however, and should be accepted conservatively only.

The results further show that the proportion of charred tests increases in the case of the old method as the concentration increases. The tests of some of the most concentrated samples of evaporated milk could not be read at all.

The season of the year seemed to further influence the accuracy of the tests. Thus the June milk was much more difficult to handle in every respect, and the results showed greater differences than the milk made in August and November.

THE GRAVIMETRIC METHOD (ETHER EXTRACTION) FOR ESTIMATING THE PER CENT. OF FAT IN UNSWEETENED EVAPORATED MILK.

Table I of this bulletin shows that the per cent. of fat as estimated by the official ether extraction method falls short of the per cent. of fat which the evaporated milk should contain, basing same on the per cent. of fat in the fresh milk and the ratio of concentration.

Experiments were, therefore, conducted to determine the influence on the accuracy of the fat estimation of the following factors:

- Duration of ether extraction.

- Dilution of evaporated milk.

- Double ether extraction, leaching the coil with dilute acetic acid after the first extraction.

- Extraction in soxhlet with dilute acetic acid and subsequent ether extraction.

EFFECT OF DURATION OF ETHER EXTRACTION.

The effect of the length of time allowed for the ether extraction is shown in Table XIV.

TABLE XIV.

Effect of Duration of Ether Extraction on Per Cent. of Fat.

BRAND	8 Hour Extraction Per cent. Fat	16 Hour Extraction Per cent. Fat	24 Hour Extraction Per cent. Fat	Calculated Per cent. Fat
Experiment June, No. 2	7.91	8.09	8.16	not known.
Experiment June, No. 3	6.09	6.17	6.30	not known.
Experiment June, No. 4	7.01	7.17	7.30	not known.
Experiment Sep., No. 4	8.16	8.20	8.34	8.84
Experiment Nov., No. 6	9.20	9.45	9.61	10.35
Experiment Nov., No. X	7.90	8.00	8.05	8.70
Average	7.71	7.85	7.96	
Average of last 3 sam- ples	8.42	8.55	8.67	9.30

The results above tabulated show that there was a slight increase in the per cent. of fat in the case of the 16 hour extraction over the eight hour extraction. Where the ether extraction was prolonged to 24 hours there was a further slight increase. Even with the 24 hours extraction the gain in the per cent. of fat was very slight. It failed to raise the per cent. of fat of the evaporated milk to that calculated as based on the per cent. of fat in the fresh milk and ratio of concentration, by a wide margin. In the case of the last three samples, the calculated per cent. of fat of which was known, the shortage averaged .63 per cent. fat. These figures clearly show that prolonged ether extraction fails

to yield correct results. Aside from its low results, the 24 hour ether extraction does not recommend itself, owing to the objectionable time element.

DILUTION OF EVAPORATED MILK.

Two dilutions were experimented with, namely the one-half and the one-fourth dilutions. Our experiments with the Babcock test showed that a higher and more nearly correct test was obtained where a one-fourth dilution of evaporated milk was used in the place of a one-half. The same was found to be true also in the case of the ether extraction. In the following table are recorded the results of ether extractions of one-half and one-fourth dilutions of evaporated milk.

TABLE XV.

Showing Gain in the Per Cent. of Fat of One-Fourth Over One-Half Dilutions.

Brand No.	Dilution 1:2	Dilution 1:4	Gain
1	7.11	7.54	.43
2	7.73	8.38	.65
3	8.72	9.16	.44
4	6.84	7.08	.24
5	5.92	6.14	.22
6	6.83	6.93	.10
7	7.07	7.28	.21
8	7.74	7.78	.04
9	8.10	8.57	.47
10	8.86	9.09	.23
11	6.83	7.03	.20
12	7.46	7.83	.37
13	8.13	7.98	.15
14	8.33	8.64	.31
15	9.13	9.54	.41
Average			.30

The gain due to the greater dilution was very irregular. Yet there was a gain in each case, suggesting the need of at least a one-fourth dilution where accurate results are to be obtained. It is probable that the more thorough and more uniform distribution of the evaporated milk in the case of the higher dilution lessens the difficulty of extracting the fat. The ether can more easily penetrate the material containing the fat.

But even the one-fourth dilution does not liberate all the fat contained in the evaporated milk and gives too low results, as shown in Table XVI.

TABLE XVI.

Difference Between the Results of Ether Extraction with One-Fourth Dilution and Calculated Per Cent. of Fat.

Calculated Per cent. Fat	Ether Extraction Dilution 1:4 Per cent. Fat	Shortage Per cent. Fat
7.27	6.93	.34
7.91	7.28	.63
8.29	7.78	.51
8.84	8.57	.27
9.38	9.09	.29
7.25	7.03	.22
7.98	7.83	.15
8.74	7.98	.76
9.14	8.64	.50
9.70	9.54	.20
Average		.39

The official paper coil method was used in all the extractions. The weight of diluted evaporated milk taken was as near five grams as was convenient to weigh. The extraction was continued for eight hours.

The above figures show a persistent shortage in the ether extraction. A still greater dilution of the evaporated milk might tend to lessen this shortage. However, it would also multiply the possible error, so that it is very doubtful that the accuracy of

the estimation can be improved by further dilution. Another and very objectionable feature associated with the use of extreme dilutions is the easy and rapid separation of the fat in the sample, making the weighing out of a well mixed and representative portion of the diluted milk difficult. This is especially true where the evaporated milk is not homogeneous, which is often the case.

**FAT ESTIMATION BY DOUBLE ETHER EXTRACTION AND LEACH-
ING OF COIL IN DILUTE ACETIC ACID AFTER
FIRST EXTRACTION.**

The results of the experiments tabulated in the preceding chapter showed that a one-fourth dilution yielded a higher per cent. of fat than a one-half dilution. This is due very probably to the better distribution of the diluted milk over the paper coil, thus exposing a larger surface to the action of the ether, as stated before.

Since it is reasonable to assume that the deficiency in the per cent. of fat obtained by ether extraction is largely the result of interference by the caseous matter, attempts were made to remove this difficulty. The proteids of milk are soluble in dilute acids. This suggests the possibility of removing the greater part of the proteids present by leaching the paper coil with acidulated water, and at the same time retaining the fat. The results are shown in Table XVII.

TABLE XVII.

Showing Gain with Modified Ether Extraction Method and One-Fourth Dilution of Evaporated Milk Over Official Method.

Experimental Evaporated Milk, Sheridan Factory No.	Official Ether Extraction	Modified Ether Extraction	Gain
June Experiment.			
1	7.11	8.06	.95
2	7.73	8.93	1.20
3	8.72	9.68	.96
4	6.84	8.02	1.18
5	5.92	6.50	.58
August Experiment.			
1	6.83	7.39	.56
2	7.28	7.61	.33
3	7.74	8.18	.44
4	8.10	9.04	.94
5	8.86	9.71	.85
November Experiment.			
1	6.83	7.30	.43
2	7.46	8.05	.59
3	8.13	8.70	.57
4	8.33	9.20	.87
5	8.67	9.60	.93
6	9.13	10.40	1.27
Other Brands.			
Star	7.83	8.35	.52
Morning Glory.....	9.74	10.48	.74
Carnation	7.46	8.05	.59
Beauty	7.64	8.47	.83
Van Camp's	7.77	8.69	.92
Monarch	7.28	8.09	.81
Diadem	7.56	8.16	.60
Reindeer	7.65	8.08	.43
Dundee	7.58	8.73	1.15
No label on can.....	6.72	7.04	.32
Monarch	8.90	9.56	.66
Peerless	8.58	9.04	.46
Van Camp's	6.20	6.98	.78
Pet	8.50	9.26	.76
Wilson's	7.68	8.21	.53
Dundee	7.25	8.73	1.48
Wilson's, November	8.17	8.73	.56

The evaporated milk was diluted one-fourth (one part evaporated milk to three parts water). About five grams of the dilution were weighed out and transferred to the paper coil, dried, placed in S. & S. fat-free extraction thimbles and extracted with anhydrous ether for eight hours. The thimbles with the coils were then removed and the ether evaporated. The thimbles and coils were then placed in a beaker about one inch deeper than the thimbles. The beaker was nearly filled with warm dilute acetic acid (dilution 1 per cent.) After digesting for one hour, the dilute acid was syphoned off, a fresh quantity added and the process of digesting and syphoning repeated. The thimbles and coils were then leached with hot water until the greater portion of the acid was removed, then dried in the steam oven and a second time extracted with ether, using the same flasks and soxhlet that were used for the respective coils before the leaching. The second extraction was continued for four hours. The fat was weighed and the per cent. of fat calculated after the first and second extraction.

The results show a very marked increase in the per cent. of fat as the result of the leaching process. The only objectionable feature of this modified process seemed to lie in the length of time necessary to complete the fat estimation, as shown below.

First drying of coils.....2 to 4 hours
 First extraction.....8 hours
 Leaching 3 hours
 Second drying.....6 hours
 Second extraction.....4 hours

—
 Total time.....25 hours

The duration of the first ether extraction was then reduced from eight hours to four hours with the following results:

TABLE XVIII.

Showing Same Experiment as Table XVII Except that the First Ether Extraction Lasted Only Four Hours Instead of Eight Hours.

Brand	First Ether Extraction 8 Hours	First Ether Extraction 4 Hours	Modified Babcock Test
Wilson's (Nov.)	8.73	8.70	8.70
Monarch	9.56	9.58	9.60
Wilson's (June)	6.86	6.68	6.64

The above results show that there was no appreciable difference whether the first extraction was conducted for eight or four hours.

FAT ESTIMATION BY EXTRACTING WITH DILUTE ACETIC ACID IN SOXHLET, WITH SUBSEQUENT ETHER EXTRACTION.

Since the leaching of the coil in the thimble seemed to be associated with no loss of fat, there appeared to be no serious objection to the omission of the first drying and of the first ether extraction, and to start the fat estimation by leaching the coil at once. The results are shown in Table XIX.

TABLE XIX.

Showing Results of Extraction with Dilute Acetic Acid and then with Ether as Compared with Double Ether Extraction and Leaching with Dilute Acetic Acid.

Brand	Extraction with Dilute Acetic Acid and then with Ether	Double Ether Extraction and Leaching with Dilute Acetic Acid	Modified Babcock Test
Wilson's (April)	7.36	7.36	7.26
Wilson's (June)	8.	8.01	7.93
Wilson's (November)	8.72	8.72	8.70
Monarch	9.60	9.60	9.60
Average	8.42	8.42	8.37

The results recorded in the first column of the above table were obtained by the following method:

About five grams of a one-fourth dilution of evaporated milk were weighed and transferred to a fat-free paper coil. The coil, without drying, was placed in a wetted S. & S. fat-free thimble and extracted in the soxhlet apparatus with acidulated water (a 1 per cent. solution of acetic acid) for two hours. The soxhlet tube was then removed and several portions of hot water were poured on the coil in the thimble, the water being syphoned off

each time. This was done to remove the greater portion of the acidulated water. Coils and thimbles were then dried in the steam oven for eight hours. The thimbles containing the coils were then extracted in the soxhlet with anhydrous ether for eight hours.

The results speak for themselves. There was no difference in the per cent. of fat between the double and the single ether extraction. Since the objectionable time element which makes the double ether extraction impractical for most ordinary purposes, is greatly reduced, this new method recommends itself for use in every laboratory.

This method is referred to in the succeeding pages as the modified ether extraction method.

EXPERIMENTS PROVING THE CORRECTNESS OF THE RESULTS OBTAINED WITH THE MODIFIED ETHER EXTRACTION METHOD.

The mere fact that duplicate fat estimations of evaporated milk check each other does by no means prove that the results are correct, although, when duplicate analyses agree, the chemist generally regards them as correct and authentic. Our investigations have conclusively shown that duplicates of estimations and multiples thereof may correspond exactly, and yet the results are far from being reliable. If duplicate estimations agree, that simply means that the analyses were made under like conditions or with conditions well under control.

Nor does the fact that one method yields a higher per cent. of fat than another necessarily mean that the higher results are the correct ones.

With these facts in mind, the results obtained and described in the preceding chapters were not accepted as correct unconditionally, until adequate experiments had been concluded, proving their accuracy. These investigations covered the following points:

Acetic acid as a solvent of the caseous matter in evaporated milk.

Effect of acetic acid on solubility of butter-fat.

Chemical purity of butter-fat yielded by modified ether extraction.

Effect of per cent. of fat obtained by modified ether extraction on total percentage of complete analyses of evaporated milk.

Per cent. of fat by modified ether extraction vs. calculated per cent. of fat.

Pounds of fat in evaporated milk vs. pounds of fat in fresh milk.

Modified ether extraction vs. modified Babcock test.

ACETIC ACID AS A SOLVENT OF THE CASEOUS MATTER IN EVAPORATED MILK.

It was previously stated that the caseous matter in the evaporated milk was found to be in such condition as to render the action of ether on the fat difficult. The efforts of the writers were, therefore, bent toward providing a method for the removal of the caseous matter. Acetic acid is a well known solvent of casein. Richmond¹, in his discussion of the properties of casein, makes the following statement: "Very dilute acids seem to diminish the solubility; but it (the casein) is soluble in stronger acids, becoming, however, changed; a solution of casein in acetic acid has been used as a glue."

The successful treatment of the coil with acetic acid therefore, resolved itself into the determination of the proper dilution or strength of the acid used. It was found that a 1 per cent. solution of acetic acid yielded satisfactory results. The amount of proteids extracted by the modified ether extraction was determined as follows: a sample of evaporated milk was analyzed for its per cent. of total proteids. Another sample of the same evaporated milk was subjected to the modified ether extraction, the coil being extracted in the soxhlet with a 1 per cent. solution of acetic acid for two hours. The acetic acid solution was then evaporated to dryness and analyzed for its proteid content by the Kjeldahl method, with the following results:

Total proteids in original evaporated milk. 6.72 per cent.

Total proteids in acid solution. 4.52 per cent.

Proteids removed by leaching. 67.26 per cent.

The above figures show that about two-thirds of all the caseous matter was removed from the coil by extracting with a 1 per cent. solution of acetic acid. If it is true that the curd interferes with the action of the ether on the fat, it is obvious that the removal of most of the caseous matter makes it possible to extract most if not all of the fat upon subsequent ether extraction. Furthermore, the per cent. of lactose in the same sample of evaporated milk was 8.68 per cent. It is reasonable to assume that the greater portion of this constituent is also removed by the hot dilute acid. If this is so, then the two hour extraction with a 1 per cent. solution of acetic acid removed over 50 per cent. of the solids in the evaporated milk, exposing the fat therein very freely to the ether.

1—Richmond: Dairy Chemistry, p. 25.

EFFECT OF ACETIC ACID ON SOLUBILITY OF BUTTER FAT.

Acetic acid in its concentrated form is a ready solvent of butter-fat¹. The use of too strong acid, therefore, might easily result in the loss of fat during the leaching process. The effect of the solubility of butter-fat in a 1 per cent. solution of acetic acid was, therefore, determined. Two determinations were made by using different amounts of filtered butter-fat. The fat was placed on fat-free coils which were dropped into wetted S. & S. thimbles and extracted for two hours in the soxhlet apparatus, with a 1 per cent. solution of acetic acid. The coils and thimbles were then dried in the steam oven for eight hours and extracted with ether for four hours with the following results:

	Original weight of fat	Fat recovered by ether extraction
Sample 1	.7825 grams	.783 grams
Sample 2	.915 grams	.9145 grams

Since the fat recovered by the ether extraction was equal in weight to the original fat used, it is obvious that the butter-fat is not soluble in a 1 per cent. solution of acetic acid. It is, therefore, reasonable not to expect any loss of fat by extracting the coils with acidulated water, the coils being placed in wetted thimbles. It is possible to estimate the insoluble fatty acids in butter-fat quantitatively by washing the fatty acids on a wetted filter with boiling water.²

PURITY OF BUTTER-FAT YIELDED BY MODIFIED ETHER EXTRACTION.

Since the fat estimations with the modified ether extraction yielded much higher percentages of fat than the official method, it was reasonable to suspect that this increase in the per cent. of fat might be partly due to the presence of substances not fat in the extracted fat.

In order to determine whether any other matter was either extracted or carried over mechanically, the fat extracted from

1—Lewkowitsch: Chemical Analyses of Oils, Fats and Waxes, p. 619.

2—Richmond: Dairy Chemistry, p. 208.

evaporated milk was weighed, then dissolved in anhydrous ether, filtered through a fat-free filter and again weighed. The following results were obtained:

	Weight of fat as extracted from coil.	Weight of fat after solution in ether and filtering.
Sample 1	.206 grams	.2061 grams
Sample 2	.106 grams	.106 grams

The results show that the fat yielded by the modified ether extraction contained no impurities and that the per cent. of fat, therefore, was correct.

EFFECT OF PER CENT. OF FAT OBTAINED BY MODIFIED ETHER EXTRACTION ON TOTAL PER CENT. OF COMPLETE ANALYSIS OF EVAPORATED MILK.

It is a common observation that in the complete analysis of evaporated milk, in which the fat is estimated by the official method and where none of the constituents are determined by difference, the totals uniformly add up decidedly below 100 per cent.

Richmond¹ makes the following statement: "It is noticed that the totals of analyses of condensed milk almost invariably add up distinctly below 100 per cent.; it is probable that the milk sugar is under-estimated. In condensed milk the layer of solution which is attracted around the fat globules by surface energy has probably a composition which is identical with the composition of the liquid in which the globules are suspended. When condensed milk is diluted with water it is doubtful whether the liquid in this layer is diluted by water, as it is held by a great force and acts as though separated by a semi-permeable membrane, through which the dissolved solids must pass by osmose. As the milk is usually diluted with cold water, this process of osmose takes a considerable time, and the whole of the milk sugar is not obtained in solution, but a portion is taken down by the fat globules when they are removed previous to the estimation of the milk sugar."

Granting that the above is a fact, it is equally reasonable to assume that this layer of milk serum, consisting of caseous matter as well as of milk sugar, interferes with the liberation of the fat, and that the totals of the complete analyses of evaporated milk are low, owing to the under-estimation of the fat.

¹—Richmond: Dairy Chemistry, p. 147.

If the above assumption is not true and if, therefore, the low per cent. of fat yielded by the official method were correct, then the much higher results of the modified ether extraction would have a tendency of increasing the totals of the complete analyses to above 100 per cent. This, however, is not the case as is shown in Table XX recording the results of 24 complete analyses of evaporated milk.

TABLE XX.

Showing Complete Analyses of 24 Different Brands of Evaporated Milk.

Brand	Solids	Water	Fat	Curd	Lactose	Ash	Total
Gold Milk	29.25	70.75	9.42	8.44	9.75	1.54	99.90
Columbine.....	24.63	75.37	7.45	7.41	8.56	1.36	99.98
Every Day.....	26.20	73.80	8.07	7.54	9.10	1.47	100.15
Gold Milk	27.18	72.82	9.07	7.39	9.23	1.49	100.00
Star	29.04	70.90	8.35	7.86	10.37	1.62	99.16
Morning Glory ..	31.08	68.92	10.48	8.26	10.47	1.67	99.82
Carnation	23.81	76.19	8.05	6.49	7.55	1.24	99.49
Beauty	28.38	71.62	8.47	8.39	9.94	1.56	99.98
Van Camp's	27.89	72.11	8.69	7.52	9.66	1.54	99.52
Wilson's.....	25.23	74.77	8.70	6.53	8.68	1.37	100.05
Monarch	26.70	73.30	8.09	6.77	10.35	1.44	99.95
Diadem	24.96	75.04	8.16	7.06	7.92	1.33	99.51
Reindeer	26.66	73.34	8.08	6.88	10.21	1.45	99.96
Wilson's.....	25.62	74.38	8.21	6.89	9.20	1.43	100.11
Dundee	27.04	72.96	8.73	7.21	9.36	1.48	99.74
Sundry Samples .							
1.....	28.02	71.98	8.93	7.68	9.86	1.61	100.06
2.....	31.99	68.01	9.68	8.49	11.88	1.69	99.75
3.....	26.01	73.99	8.18	6.77	9.24	1.46	99.64
4.....	27.33	72.67	9.04	6.93	9.42	1.51	99.57
5.....	29.37	70.63	9.71	7.34	10.52	1.56	99.76
6.....	21.12	78.88	7.30	5.78	6.78	1.12	99.86
7.....	23.25	76.75	7.98	6.19	7.96	1.25	100.13
8.....	25.48	74.52	8.68	6.34	8.67	1.35	99.56
9.....	26.62	73.38	9.20	7.00	9.18	1.37	100.13
Average total percentage							99.82

Table XX shows 24 complete analyses of evaporated milk with the total percentages. Each constituent was estimated by itself; no constituent was determined by difference. The figures show that the totals vary but very little from 100 per cent. In six cases only did the total percentage exceed 100, and the highest total percentage was 100.16 only; the lowest total percentage was 99.16; the average total percentage was 99.82. Since the

extreme variations deviate comparatively very little from 100 per cent. and since the average is practically 100 per cent. it is reasonable to state that the estimation of each and every one of the constituents must be very nearly correct, and that the fat estimation with the modified ether extraction, therefore, is accurate. In fact, it is the results of this modified ether extraction that made it possible to show such uniform and nearly correct total percentages. If the results of the official ether extraction method were inserted in the place of the results of the modified ether extraction the total analyses would fall in many instances from one to two per cent. below 100 per cent.

PER CENT. OF FAT BY MODIFIED ETHER EXTRACTION VS. CALCULATED PER CENT. OF FAT.

The accuracy of the modified ether extraction is further illustrated by a comparison between the results of the modified ether extraction and the calculated per cent. of fat. The results are recorded in Table XXI.

TABLE XXI.

Showing Results of Modified Ether Extraction as Compared with Calculated Per Cent. of Fat in Evaporated Milk.

Fresh Milk		Condensed Milk			
Per cent. Fat	Per cent. Solids	Per cent. Solids	Concentration	Calculated Per cent. Fat	Modified Ether Extraction
4.6	13.4	21.12	1.58:1	7.25	7.30
4.6	13.4	23.25	1.74:1	7.98	7.98
4.6	13.4	25.48	1.90:1	8.74	8.68
4.6	13.4	26.62	1.99:1	9.14	9.20
4.6	13.4	28.23	2.11:1	9.70	9.60
4.6	13.4	30.10	2.25:1	10.35	10.40
Average				8.86	8.86

The calculated per cent. of fat was determined by multiplying the per cent. of fat in the fresh milk used, with the ratio of concentration. The ratio of concentration was based on the per

cent. of total solids in the fresh milk and the per cent. of total solids in the finished evaporated milk.

Since it has been shown conclusively that there can be no escape of fat from the milk during the process of manufacture, the per cent. of fat found in the finished product should be equal to the per cent. of fat in the fresh milk multiplied by the ratio of concentration, provided the chemical fat estimation is correct. The results tabulated above leave no doubt on this point. The difference in the per cent. of fat between the modified ether extraction and the calculated per cent. of fat is so slight that it may safely be considered within the limits of possible error of analysis. The greatest variation was .14 per cent. and the average of experiments with six different runs of evaporated milk corresponds exactly with the calculated per cent. of fat.

If the modified ether extraction yielded misleading results, the error would of necessity show up very conspicuously in the above comparison.

POUNDS OF FAT IN EVAPORATED MILK VS. POUNDS OF FAT IN FRESH MILK.

The pounds of fat in the fresh milk are equal to the pounds of fat in the evaporated milk.

The fresh milk as it arrived at the condensory was weighed and tested for fat with the Babcock test. Five thousand pounds of fresh milk testing 4.6 per cent. fat were used. The condensed milk manufactured from it weighed 2650 pounds, including allowance for mechanical losses such as spilling, etc., of 50 pounds. The modified ether extraction of the evaporated milk yielded 8.7 per cent. fat.

$$\text{Pounds of fat in fresh milk } 5000 \times \frac{4.6}{100} = 230 \text{ pounds.}$$

$$\text{Pounds of fat in evaporated milk } \frac{2650 \times 8.7}{100} = 230.5 \text{ pounds.}$$

These results show that the pounds of fat in the evaporated milk, as determined by the modified ether extraction were equal to the pounds of fat present in the original fresh milk. This fact furnishes the most striking proof of the accuracy of the modified ether extraction and of the correctness of its results.

MODIFIED ETHER EXTRACTION VS. MODIFIED BABCOCK TEST.

In previous chapters it was shown that the modified Babcock test yields correct results. Conclusive evidence was also produced that the modified ether extraction method determines the per cent. of fat in evaporated milk accurately; therefore the results of the two modified methods should agree. A series of fat determinations with both methods was conducted and the results thereof are recorded in Table XXII.

TABLE XXII.

Modified Ether Extraction vs. Modified Babcock Test. Results with 24 Brands of Evaporated Milk.

Brand	Modified Ether Extraction	Modified Babcock Test
Peerless	9.04	9.1
No label on can.....	7.04	6.9
Pet	9.26	9.3
Van Camp's	6.98	6.7
Wilson's	8.73	8.8
Monarch	9.56	9.6
Dundee	8.73	8.7
Wilson's	8.21	8.2

Experimental Evaporated Milk.		
No. 1	6.5	6.6
" 2	8.06	7.93
" 3	8.02	7.9
" 4	8.93	8.67
" 5	9.68	9.5
" 6	7.39	7.3
" 7	7.61	7.8
" 8	8.18	8.27
" 9	9.04	9.2
" 10	9.71	9.4
" 11	7.3	7.13
" 12	7.98	7.92
" 13	8.68	8.73
" 14	9.20	8.97
" 15	9.6	9.6
" 16	10.4	10.43
Average	8.45	8.40

The figures in Table XXII show the per cent. of fat as determined by the modified ether extraction and the modified Babcock test with 24 separate lots of evaporated milk. A careful study of these figures will convince the reader that the results in the case of each individual brand correspond very closely and the averages of the two methods agree exactly.

While the fact that the two methods give similar results is not absolute proof of the correctness of either, it establishes the connecting link in the long chain of data, all of which give evidence of the undisputed accuracy of the two methods.

COMPARISON OF RESULTS OF MODIFIED ETHER EXTRACTION WITH THOSE OF A COMMERCIAL CHEMIST.

Duplicate cans of 12 different brands of evaporated milk were analyzed by a commercial chemist and also in our laboratory. In the latter case the modified ether extraction was used. The report from the commercial chemist is recorded in Table XXIII.

TABLE XXIII.

Showing Analyses of 12 Different Brands of Unsweetened Condensed Milk by a Commercial Chemist. October 28, 1908.

BRAND	Per cent. Fat	Per cent. Ash	Per cent. Solids
Beauty	7.8	1.61	27.73
Wilson's	6.6	1.45	25.22
Peerless	6.9	1.75	29.22
Diadem	6.0	1.45	25.47
None-Such	6.3	1.30	26.57
Star	6.4	1.75	29.97
Elgin	7.2	1.75	30.75
Every Day	6.9	1.55	25.97
Van Camp's	6.3	1.57	26.44
Pet	6.6	1.50	25.10
Monarch	6.2	1.55	26.35
Carnation	6.3	1.35	24.00
Average	6.63	1.55	26.90

A study of these figures suggests that all of the brands thus analyzed must be the product of partly skimmed milk. Basing the ratio of concentration on the per cent. of ash and assuming that the per cent. of ash in the fresh milk was .7 per cent., the

average ratio of concentration would be 2.21:1. The average percentage of fat in the evaporated milk divided by the average ratio of concentration gives the average per cent. of fat in the fresh milk from which these brands were made: $\frac{6.63}{2.21} = 3$ per cent.

fat in fresh milk. It is highly improbable that the mixed milk of 12 different factories or even of any factory should test as low as 3 per cent. fat at any time of the year. In the case of some of the brands recorded in the above table it is positively known that they are manufactured in factories receiving largely Jersey milk, which would cause the per cent. of fat in the fresh milk to average above 4 per cent. It is further known that the manufacturers of most of these brands do not skim their fresh milk nor any part thereof before condensing and that most of them do not even have a separator in their factories.

Duplicates of the same batches of the respective brands of evaporated milk were analyzed with the modified ether extraction. The results are compared with those of the commercial chemist in Table XXIV.

TABLE XXIV.

Showing Difference Between Analyses of Commercial Chemist and Modified Ether Extraction.

Brand	Commercial Chemist Per cent. Fat	Modified Ether Extraction Per cent. Fat	Difference
Beauty	7.8	8.47	.67
Wilson's	6.6	8.70	2.20
Peerless	6.9	7.85	.95
Diadem	6.	8.16	2.16
None-Such	6.3	7.64	1.34
Star	6.4	8.35	1.95
Elgin	7.2	10.48	3.28
Every Day	6.9	7.66	.76
Van Camp's	6.3	8.69	2.39
Pet	6.6	7.73	1.13
Monarch	6.2	8.09	1.89
Carnation	6.3	8.05	1.75
Average	6.63	8.32	1.69

The table speaks for itself. The difference between the results of the commercial chemist and our own analyses ranged from .67 per cent. to 3.28 per cent. fat. In every case our estimations by the modified ether extraction were higher. The average per cent. of fat obtained by the modified ether extraction was 8.32 per cent. This divided by the ratio of concentration above referred to gives $\frac{8.32}{2.21} = 3.76$ per cent. of fat in the original fresh milk, and compares more favorably with the richness of the fresh milk received at the average condensory. The average gain in the 12 different brands was 1.69 per cent. fat. This is a striking example of the danger of unjust criticism and possibly prosecution, when analyses, as recorded above, furnish the bases upon which conclusions are drawn.

Results of Other Investigators.

Due consideration was given to investigations of this character made in other laboratories. It was soon found, however, that comparatively little had been done to establish conclusive data regarding the determination of fat in unsweetened evaporated milk. The experiments and results reported by other investigators strongly suggest that the peculiar properties (chemical and physical) of the unsweetened evaporated milk are not well understood and that not sufficient weight is generally attached to the difference in the physical and chemical make-up between sweetened and unsweetened condensed milk. Even in the "Official and Provisional Analysis"¹ the methods given are recommended for "condensed milk" only, ignoring entirely any differentiation between sweetened and unsweetened condensed milk.

Sweetened condensed milk was on the market some 20 years before unsweetened evaporated milk was successfully manufactured. The sweetened product has, therefore, been in the lead in the past and is even now more generally known. Consequently, the methods of analysis devised were intended chiefly for sweetened condensed milk, though they are now officially recommended and used in many laboratories for both the sweetened and unsweetened.

Thus Wiley² recommends for the fat estimation of "condensed milk" Leach's modification of the Babcock test and Geissler's double ether extraction. Both of these methods, as well as

1—Wiley: U. S. Bureau of Chemistry, Bulletin No. 107, p. 123.

2—Wiley: Official and Provisional Methods, U. S. Bureau of Chemistry, Bulletin No. 107.

Farrington's modified Babcock test, give good results with sweetened condensed milk, for which they were originally intended. The chief modifying factor lies in their provision for removing the interfering cane sugar. In the modified Babcock test by Leach and by Farrington the curd of the diluted sweetened condensed milk is precipitated, locking up the fat, and the resulting filtrate or whey, containing most of the cane sugar, is decanted. Without the removal of the excessive sugar or the use of hydrochloric and acetic acids in the place of sulphuric acid, sweetened condensed milk cannot be successfully tested with the Babcock test.

Geissler's¹ double extraction method provides for the leaching of the curd in water after the first ether extraction. This dissolves out most of the cane sugar and thus removes the chief element of interference with the action of the ether on the fat.

In the unsweetened condensed milk there is no cane sugar to interfere, but there are other obstacles that make the complete extraction of the fat difficult. The process of manufacture through which the milk passed, renders the curd difficultly soluble and hard to penetrate by ether. This curd contains locked up in itself, a part of the fat.

The modification of the test or estimation of fat in unsweetened evaporated milk, therefore, should deal with the removal or solution of this objectionable curd. It is unreasonable to expect that methods of fat estimation, purposely devised for sweetened condensed milk, should serve successfully in fat estimations of unsweetened evaporated milk.

The results reported from other laboratories and by the Association of Official Agricultural Chemists are too few and irregular to be conclusive, nor has the correctness of any of those results been proven experimentally. It is probable that most if not all of the results recorded by the Association of Official Agricultural Chemists² are too low.

Leach³ says: "For condensed milk containing no cane sugar, these precautions (meaning the Leach modification of the Babcock test for sweetened condensed milk) are, of course, unnecessary, the ordinary Babcock method being directly employed with a weighed portion of the milk."

1—Joseph F. Geissler: The Estimation of Fat in Sweetened Condensed Milk. *Journal American Chemical Society*, Vol. XXII, No. 10.

2—Proceedings of the Twenty-third Annual Convention, Association of Official Agricultural Chemists. U. S. Bureau of Chemistry, Bulletin No. 105, pp. 101-108.

3—Leach: *Food Inspection and Analysis*, p. 150.

Farrington and Woll¹ recommend the weighing of eight grams of evaporated milk into the test bottle and proceeding with the ordinary Babcock test. They recommend the official ether extraction method for evaporated milk, but emphasize the advantages of greater dilution (dilute five times.)

It is true that Geissler's double ether extraction method, leaching the coil in water between extractions, gives higher results than the single ether extraction without leaching. This is undoubtedly due to the fact that the milk sugar is dissolved and the residue of evaporated milk on the coil is rendered porous, facilitating the action of the ether during the second extraction. The results, however, are still lower than they should be. The time necessary to complete the estimation with this method, too, is very objectionable, if not prohibitive for practical purposes. Furthermore, the "approximate" accuracy of the results depends largely on the condition and amount of curd present in any given sample, and this in turn is controlled by the season of the year, the degree of concentration and the process of manufacture employed, factors of which the analyst usually has no data. Thus the experiments described in this bulletin demonstrated that the evaporated milk manufactured in early summer responds less readily to the action of ether than that made in the fall of the year. The caseous matter in June milk seems to be more intensely affected by the high temperatures of the process, rendering the curd more insoluble and less easily penetrable by ether. Again, other things being equal, the greater the degree of concentration the more difficult it is to extract all the fat, without dissolving the interfering curd. And, finally, there is a decided difference in the method of processing as practiced by different manufacturers. The solubility of the caseous matter is affected differently by the various processes used. For this reason some evaporated milks give up their fat comparatively easily when extracted with ether; others fail to respond to ether extraction in a normal way unless the curd in them has been either dissolved or partly removed.

THE GOTTLIEB METHOD FOR THE DETERMINATION OF FAT.

The Gottlieb method for fat determination² has been used and recommended by numerous authorities³. The accuracy of this method was subjected to a careful test. The results are recorded in Table XXV.

1—Farrington and Woll: *Testing Milk and Its Products*.

2—Landw. Vers. Sta. 40, (1892) pp. 1-27.

3—Farrington and Woll: *Testing Milk and Its Products*, p. 220.

3—Wiley: U. S. Bureau of Chemistry, Bulletin No. 105, p. 104.

TABLE XXV.

Comparing Gottlieb Method with Modified Ether Extraction.

Brand	Gottlieb Method Per cent. Fat	Modified Ether Extraction Per cent. Fat	Shortage with Gottlieb Method Per cent. Fat
Experiment June, No. 4	7.64	8.02	.38
Experiment Sep., No. X	8.01	8.21	.20
Experiment Nov., No. 1	6.84	7.30	.48
Experiment Nov., No. 2	7.74	7.98	.24
Experiment Nov., No. 3	8.38	8.68	.30
Experiment Nov., No. 4	8.92	9.20	.28
Experiment Nov., No. X	8.38	8.70	.32
Average	7.99	8.30	.31

The above results were obtained by giving the sample in each case two treatments with sulphuric ether and petroleum ether. The petroleic ether was distilled before using, since it was found that even the best grades of this reagent contain traces of impurities.

The duplicates of all estimations agreed very closely. The per cent. of fat of each estimation, however, was lower than that obtained by the modified ether extraction. The average shortage with the Gottlieb method was .31 per cent. fat.

For rapid commercial work the Gottlieb method offers distinct advantages, such as rapidity of estimation, and ease of manipulation, but the results are decidedly too low.

DIRECTIONS FOR MODIFIED BABCOCK TEST WITH UNSWEETENED CONDENSED MILK.

APPARATUS:

- One cream balance.
- One 17.6 c.c. pipette.
- One 17.5 c.c. acid measure.
- One 50 c.c. glass beaker.
- Ten per cent. milk test bottles.
- One Babcock centrifuge.
- Commercial sulphuric acid, specific gravity 1.82 to 1.83.

MANIPULATION OF TEST.

Carefully weigh 4.5 grams of well-mixed evaporated milk into the 10 per cent. test bottle. Add one pipetteful of water. Add 17.5 c.c. of sulphuric acid and shake until the curd in the test bottle is completely dissolved. Whirl at usual speed (900 to 1000 revolutions per minute) for five minutes. Mix equal portions of water and sulphuric acid in glass beaker. For one or two tests one pipetteful of water and one acid measure full of acid is sufficient. Fill test bottle to the zero mark with this hot diluted acid. Whirl for two minutes in tester, fill bottles to about the 8 per cent. mark with hot water, whirl for one minute and read the test at 140 degrees F. The fat column must be read from the top of the upper meniscus to the bottom of the lower meniscus. Read from A. to B. Multiply the reading by 4. This gives the correct per cent. of fat.

For making numerous tests from the same sample it is advisable to dilute the evaporated milk with equal parts of water, by weight; then weigh nine grams of this dilution into the test bottles and add one-half pipetteful of water.

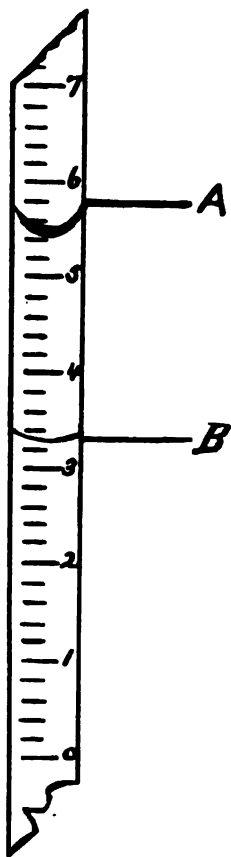


Fig. 6. Showing section of graduated neck of Babcock Milk Test Bottle. Read fat column from A to B.

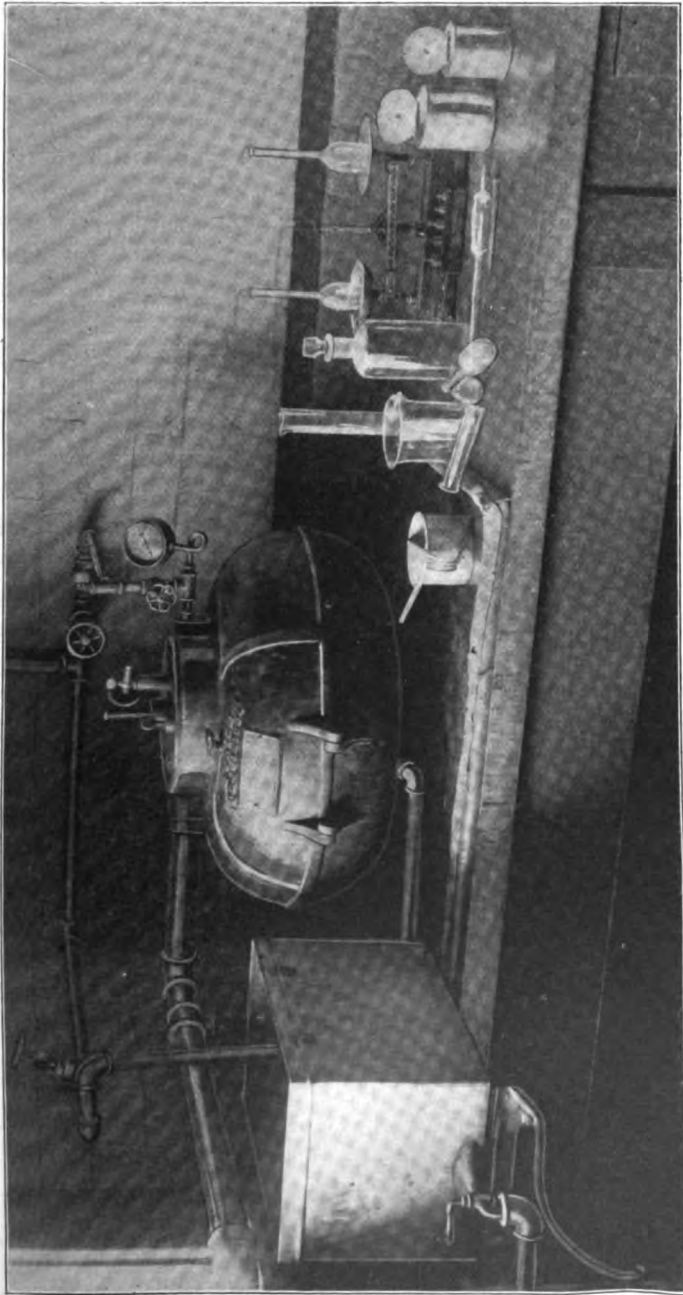


Fig. 7. Showing Apparatus for Modified Babcock Test of Unsweetened Evaporated Milk.

DIRECTIONS FOR MODIFIED ETHER EXTRACTION.

Dilute the evaporated milk one-fourth (use one part by weight of evaporated milk and three parts of distilled water). Weigh out about five grams of this dilution and transfer to fat-free paper coil. Place the coil without drying, in wetted S. & S. thimble and extract in soxhlet apparatus for two hours using a 1 per cent. solution of acetic acid as a solvent. Remove soxhlet apparatus with coil and thimble from condenser and flask. Pour small portions of hot water upon coil to remove most of the dilute acid. Dry thimble and coil in steam oven from six to eight hours, or until thoroughly dry. Extract with ether in soxhlet for eight hours; evaporate ether and weigh flask as usual.

Instead of using the soxhlet for extracting with the 1 per cent. acetic acid solution, the thimble containing the coil can be placed in a low beaker and enough of the acetic acid poured in to have the acid rise to within about one-half inch from the top of the thimble. Place beaker in water bath at 60 degrees C. for 20 minutes, syphon off acid solution and add a fresh portion. Repeat this several times and follow it up with two leachings in hot water to remove excess of acid solution. Dry thimbles and coils in steam oven and extract with ether.

By the use of the soxhlet apparatus for acid extraction the extraction is more complete and no attention is given the apparatus after the boiling of the dilute acid has been regulated.

Summary.

1. There is no loss of fats nor of volatile fatty acids during any part of the process of manufacture of unsweetened evaporated milk.

2. The ordinary Babcock test and the official method of fat estimation do not liberate all the fat present in evaporated milk. Either method results in a shortage of from .5 to 2 per cent. of fat.

3. The fat column in the ordinary Babcock test bottle is generally cloudy, and contains charred and curdy deposits, making accurate reading difficult.

4. The use of more or less sulphuric acid than the normal amount (17.5 c.c.) does not affect the tests, nor does it improve the clearness of the fat.

5. The use of solvents, such as alkalies and borax, does not materially improve the test.

6. Prolonged exposure of the diluted evaporated milk in the test bottle to the action of the sulphuric acid before whirling tends to increase the reading. Exposure of 24 hours raises the test practically to the correct per cent. of fat. But the fat remains cloudy, rendering correct reading difficult.

7. A one-fourth dilution of the evaporated milk (one part milk to three parts water) increases the test to the correct per cent. of fat, but does not improve the clearness of the reading.

8. The addition to the test bottle of hot dilute sulphuric acid (one part acid to one part water) in the place of hot water after the first whirling prevents the precipitation of charred and curdy masses and yields a clear fat column, making accurate reading possible.

9. Uniformly correct results are obtained by the use of a one-fourth dilution of evaporated milk and of dilute acid after the first whirling in the place of water.

10. Prolonged ether extraction increases the per cent. of fat yielded slightly, but fails to yield correct results. Ether extraction for 24 hours results in a shortage of over .5 of 1 per cent. of fat.

11. The greater the degree of dilution of evaporated milk the more nearly complete is the ether extraction. A one-fourth dilution fails to make possible the extraction of all the fat present.

12. The extraction of the coil with dilute acetic acid for two hours with subsequent ether extraction for eight hours liberates all the fat and yields uniformly correct results.

13. The correctness of the results of the modified ether extraction (with dilute acetic acid and ether) is demonstrated by the following facts:

- a. About two-thirds of the caseous matter is removed.
- b. The butter-fat is not soluble in a 1 per cent. solution of acetic acid.
- c. The butter-fat yielded by this method is chemically pure.
- d. The complete analyses of the samples total practically 100 per cent.
- e. The per cent. of fat yielded by this method is equal to the per cent. of fat in the fresh milk multiplied by the degree of concentration.
- f. The pounds of fat found in the evaporated milk by this method are equal to the pounds of fat in the fresh milk.
- g. The per cent. of fat obtained by this method is equal to that of the modified Babcock test.

14. The results of the modified ether extraction with 12 different brands of evaporated milk averaged 1.69 per cent. fat higher than those reported by a commercial chemist. The minimum difference was .67 per cent.; the maximum difference was 3.28 per cent. fat.

15. The chief factor making the fat extraction with the official ether extraction method and the ordinary Babcock test difficult and incorrect, is the peculiar condition of the caseous matter in evaporated milk. The removal or solution of the caseous matter, therefore, is necessary in order to obtain accurate results.

16. Methods used for fat estimations of sweetened condensed milk are inadequate when applied to unsweetened evaporated milk.

17. The season of year when manufactured, the degree of concentration and the particular process of manufacture affect the properties of the caseous matter in evaporated milk. These factors explain the difference in the results obtained by the ordinary method of fat determinations with samples of different brands.

18. The Gottlieb method offers many advantages and the results are uniform, but the per cent. of fat is low.

Acknowledgement.

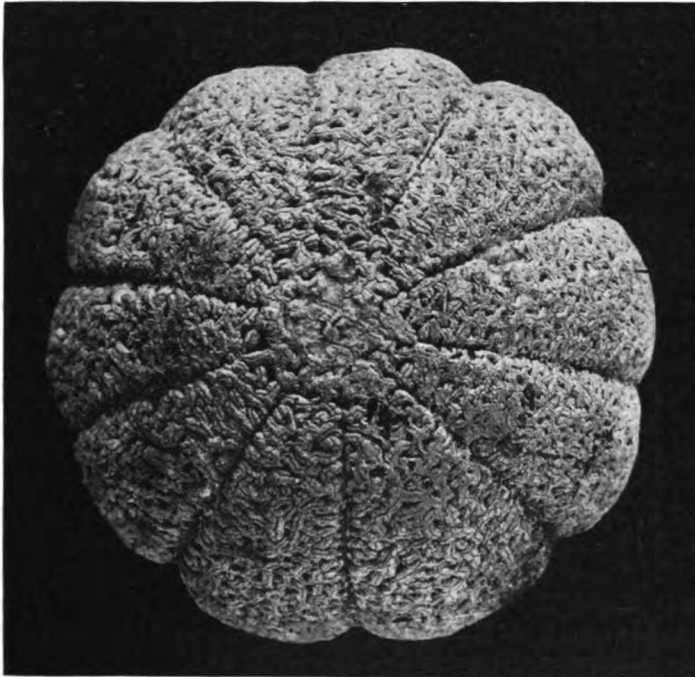
In conclusion we wish to express our appreciation of the courtesies extended to the writers by Mr. W. T. Wilson, Manager and Secretary, Indiana Condensed Milk Co., Sheridan, Ind., whose co-operation made possible the thoroughness of our investigations. Acknowledgement is due also to Mr. Wm. F. Epple, Assistant in Dairy Chemistry, for efficient assistance in the analytical work, and to Arthur Harris and Company, Chicago, for the use of the illustration of their milk condensing pan as shown on the title page of this bulletin.

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PURDUE UNIVERSITY JUL 5 1909

Agricultural Experiment Station



BULLETIN No. 135. VOL. XIV.

JUNE, 1909.

GROWING BETTER GEMS

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GROWING BETTER GEMS.

J. TROOP.

C. G. WOODBURY.

It is the purpose of this bulletin to discuss certain factors which have a direct bearing on the improvement of Indiana cantaloup growing, to report further progress in certain lines of investigation, which were mentioned in Bulletin No. 123 and to make certain recommendations, the carrying out of which will so improve the quality of Indiana cantaloups that they may command better prices on the market, and leave a greater profit with the grower.

The investigations upon which this bulletin is based were carried on principally at Decker, since at this point cantaloup growing is more extensively practiced than in any other restricted locality in the state.

SPRAYING.

In bulletin No. 123 the writer stated that the indications were that the rust or blight could be controlled cheaply by spraying with Bordeaux mixture. The rust is a fungus disease and usually causes considerable loss to the growers. It is nearly always much more severe in wet seasons than in dry. Co-operative experiments in 1907, as well as the experience of workers in other parts of the country had demonstrated quite clearly the effectiveness of Bordeaux in keeping the vines free from the disease. Further and more exact information was desired, however, as to the cost and profit of the work for Indiana growers. For this purpose field spraying was carried on in 1908 on a commercial scale. It was not the intention to attempt to keep the vines absolutely free from rust, but to spray sufficiently to hold the disease in check if possible, so the plants would be able to mature a healthy crop. This was accomplished. The rust usually starts in the center of the hill and in the later sprayings it was this part of the vine that received the most of the spray. No especial pains were taken to thoroughly cover the ends of the runners. The season of 1908 was one of unusual dryness with very few cloudy days during the time when the rust is generally most severe. These conditions in one sense operated against the success of the spraying, because the rust caused less damage than in an ordinary season. From another view point such a season was fortunate for the work, since if spraying would yield an appreciable profit under such circumstances, more striking results might be expected in seasons when the rust caused more damage to the unsprayed crop.

The area of the experimental plot from which records were made was 5.31 acres, a little over three and a half acres being sprayed. The plots were laid off in rows across a field of cantaloups



FIG. 1. Spraying cantaloupes. Three sets of double Vermorel nozzles are used, spraying three rows at a time. Photo by C. G. Woodbury.

containing about 30 acres. A horse power Sframotor machine was used, which covered three rows at a time, discharging the Bordeaux from a double Vermorel nozzle above each row at a pressure of about 100 pounds. The 5-5-50 formula was used in making Bordeaux. (For directions see Bulletin 118 or 123). Five sprayings were given on June 18 and 25, July 9, 21 and 28, respectively. The first application was made just about the time the rust spots made their first appearance, the first setting of cantaloups having been made a few days previous.

The details of the work were in charge of Mr. H. C. Kennedy, portions of whose report are incorporated herewith.

The rust did not begin to spread to serious proportions until the cantaloups had begun to ripen. For this reason the application made on July 9 appeared to be the most effective since the cantaloups began to come off at about this time, and the vines which were not sprayed were beginning to rust badly about the hill.

Following is the yield of cantaloups in field crates for each day, taken on the basis of the same number of rows for each.

Date	Sprayed Number of crates	Not Sprayed Number of crates
July 13.....	6	6.46
July 14.....	6.2	9.40
July 15.....	9.25	9.7
July 16.....	15.66	14.77
July 17.....	12	13.85
July 18.....	12	17.23
July 20.....	19.75	15.32
July 21.....	6	6.46
July 22.....	4	5.54
July 24.....	8.33	6.46
July 25.....	11.25	16.31
July 27.....	29.50	29.54
July 28.....	19.50	24
July 29.....	27	24
July 30.....	24.3	27.45
July 31.....	27.5	9.30
Aug. 1.....	28.25	24.92
Aug. 3.....	29.75	19.85
Aug. 4.....	13.75	6.65
Aug. 5.....	17.50	4.02
Aug. 6.....	15	8.30
Aug. 7.....	11	3.70
Aug. 10.....	8.5	3.70
Aug. 14.....	5	
Total	366.99 crates	306.93 crates

Increase due to spraying 60.06 crates on 3.54 acres or approximately 17 crates per acre.

The field crates contain as much as two and one-half half bushel climax baskets, or three third-bushel baskets. Since the bulk of the crop was marketed in the former package, it is used as the basis in estimating.



Photo by C. G. Woodbury.

Fig. 2. Types of commercial packages. At left two pony crates; in center, the third-bushel basket; at right, the standard Rocky Ford, or "forty-five."

The net price received for the crop (excluding cost of package and freight only) was 32 cents per basket. The 17 field crates would equal 42.5 baskets, which selling at 32 cents, would give a return of \$13.60 per acre in favor of the sprayed plots.

Cost of spraying:

Copper sulphate	75 pounds @ \$.08 =	\$6.00
Lime	75 pounds @ .90 per bbl. =	.34
Man and team	3¾ hours @ .30 =	1.13
Total cost for 3.54 acres.....		\$ 7.47
Total cost per acre.....		2.11
Gross profit		13.60
Expense per acre.....		2.11
Net profit in favor of spraying.....		11.49

This profit per acre, it may be noted, is sufficient to pay in one year for the cost of the sprayer used, if only 10 or 12 acres are sprayed. Many of the growers raise from 50 to 75 acres of cantaloups every season. The profit is also dependent on the selling price of melons. In a season like that of 1907, when cantaloups were high, the profit would be almost double that made this season.

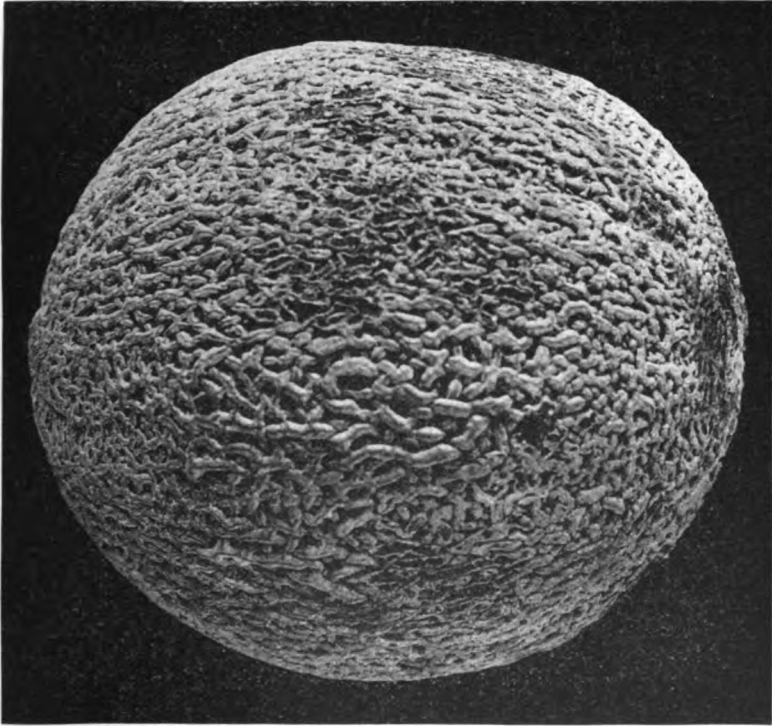


Photo by C. G. Woodbury.

Fig. 3. Ideal netting. End view of this melon is shown on title page. This type of netting is usually associated with high quality.

In addition to the above, Mr. Richard Ready sprayed about 45 acres under the direction of the Station with the same outfit used in the experiment, leaving about 15 acres unsprayed as a check. Mr. Ready's field was about a mile from the experimental plot, and the unsprayed vines were much more severely affected than those from which yield records were kept. Had it been possible to secure exact records, it is the opinion of the growers who saw both fields during the season that a much greater profit from the spraying would have been shown on Mr. Ready's field. Mr. Ready himself estimates that the spraying doubled the yield.

IMPROVING THE TYPE.

The leading market cantaloups in Indiana are various strains of the Netted Gem. This variety as it has been developed in the vicinity of Rocky Ford, Colorado, is probably as widely known among the consuming population as any sort grown.

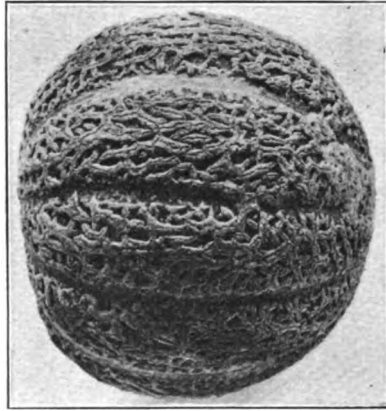


Fig. 4, A.

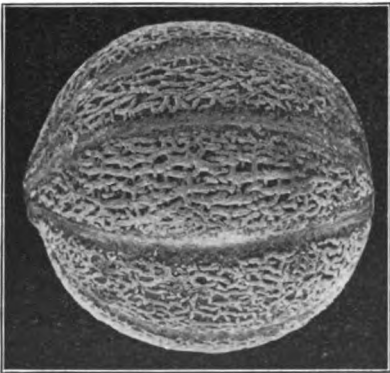


Fig. 4, C.

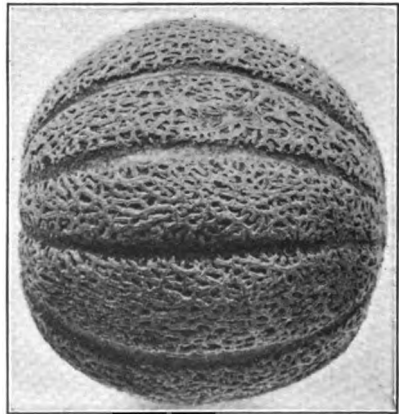


Photo by C. G. Woodbury.

Fig. 4, B.

Fig. 4, A. B. C. Variations in types of melons now grown. All are of good quality but the lack of uniformity is a disadvantage.

It is the conviction of those who have made a study of the business, that Indiana growers can produce and are producing in limited quantities, a product which in attractiveness, flavor and shipping qualities, is fully equal to that grown in any part of the country. In order, however, to make the whole output of uniform excellence and to not only raise the standard of Indiana melons, but to keep

it high, it is necessary that certain practices now common be abandoned and others substituted for them.

These practices are chiefly the carelessness in seed selection, the indifference as to source of seed, the variability in the types grown resulting from the lack of unanimity in what the ideal type shall be and lastly in the too frequent marketing of an inferior and poorly matured product from diseased vines.

An ideal type of Netted Gem for Indiana growers is here suggested, based partly upon market requirements and demands and partly upon the experience of Colorado growers in producing the Rocky Ford Gem.

Size—Slightly less than five inches in length and slightly over four inches in diameter. This size packs to best advantage in the standard Rocky Ford crate or "forty-fives."



Photo by O. G. Woodbury.

Fig. 5. Variations in size of seed cavity. Seed melons should not be selected from the outside appearance alone. Save seed only from thick-fleshed individuals.

Seed Cavity—Small and well filled with seed.

Flesh—Thick, light green in color, shading uniformly deeper, from the small seed-cavity to the thin rind.

Netting—Heavy, well defined and uniform over the whole surface of the melon. A Gem of this type will stand up longer and ship better than the more prominently ribbed types.

Flavor—Rich, smooth and melting. This flavor is usually found in a melon which meets the other requirements mentioned.

Vine—Should be strong and prolific and should produce as early ripening a product as possible.

A valuable rust-resistant strain has recently been developed in Colorado and it is possible that it may prove of considerable value to Indiana growers. The variety as grown in Indiana in 1907 from seed furnished through the courtesy of the Colorado Experiment Station, was of very fine quality and markedly resistant to the rust fungus, but it was fully two weeks later in ripening than the Indiana crop. Its extra large size under Indiana conditions also proved a disadvantage. This strain is being developed, however, and after a

few seasons in our climate, with careful attention given to selection for earliness and also to keep up the rust-resistant quality, very good results may be expected from it.

With attention to the above points, with a general agreement among growers in the principal shipping centers as to what the Indiana Gem shall be with a careful saving of seed by individual

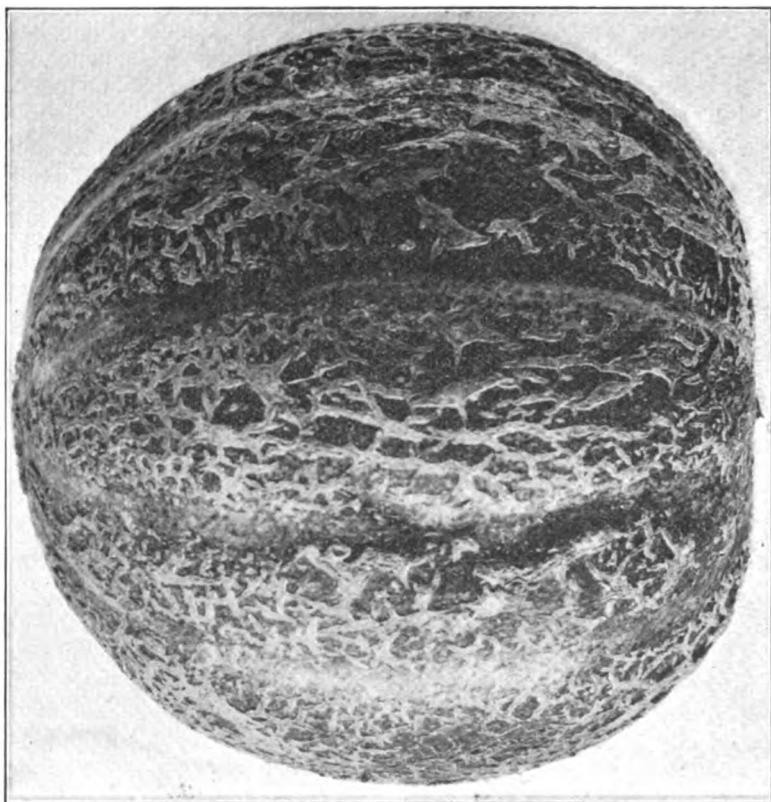


Photo by C. G. Woodbury.

Fig. 6. A "sleeker". Such melons, prematurely ripened from diseased vines, are utterly lacking in flavor, and should never be marketed.

growers, the Indiana cantaloup business can be decidedly improved in a few years.

With a little care and attention, the grower can save better seed than he can buy. The difficulty at present is the lack of system or ideal in seed saving. Too often it is done at the close of the season. For an early crop on the contrary, selection for seed should continually be made from the earliest maturing melons; nor should selection for seed be made at the packing shed. This is exactly

analogous to the selection of seed corn from the crib, and ignores entirely the character of the plant which produced the seed melon. The plant should be vigorous and prolific, and in selecting seed, its character cannot profitably be overlooked. Another poor practice is throwing melons to the seed pile without cutting. Selection should not depend upon the outside appearance alone. The flavor, character and thickness of the flesh, are all-important points to the consumer, and the fact must never be lost sight of that it is upon the favor of the consumer that the final profit in the business depends.

PURDUE UNIVERSITY

Agricultural Experiment Station

BULLETIN No. 136, Vol. XV

OCTOBER, 1909



STEER FEEDING

IV

WINTER STEER FEEDING

1908-9

Part I. Influence of Age on the Economy and Profit of Fattening Steers in Winter.

Part II. Corn Silage, Cotton-Seed Meal and Clover Hay for Fattening Two Year Old Steers.

Part III. Results of Short vs. Long Feeding Periods.

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WINTER STEER FEEDING

1908-9

J. H. SKINNER

W. A. COCHEL

SUMMARY.

1. The profit from feeding was satisfactory in all lots of cattle used in the feeding experiments during the winter of 1908-9.

2. The amount of feed consumed, daily gain, cost of gain and profit per steer increased with the age of the cattle.

3. Two year old cattle placed in the feed lot in equal condition and given a full feed attain a higher finish during a six months feeding than either yearlings or calves.

4. The margin between buying and selling prices necessary to insure a profit, increases with the age of the cattle.

5. The margin between buying and selling prices of yearlings and two year old steers was \$2.25 per hundred; of calves \$2.00.

6. An increase of 10 cents per bushel in the price of corn required a corresponding increase in the selling price of two-year-olds, 41 cents per hundred; of yearlings, 42 cents per hundred; of calves, 40 cents per hundred.

7. An increase of 50 cents per hundred in the original cost of cattle required an increase of 29 cents per hundred in the selling price of calves, 31 cents in that of yearlings, and 35 cents in that of two-year-olds.

8. The amount of capital required to handle the same number of cattle increases with their age.

9. The amount of pork produced from the droppings increased with the age of the cattle.

10. The price received per bushel for corn was 78.1 cents when fed to calves, 78.6 cents when fed to yearlings, and 79.3 cents when fed to two-year-olds during the winter of 1908-9. The profit per head was \$6.73 on calves, \$10.84 on yearlings, and \$12.79 on two-year-olds from a six months feeding period.

11. The profit per dollar invested in cattle, hogs and feeds for six months was 12.5 cents in feeding calves, 13.7 cents in feeding yearlings and 12.5 cents in feeding two-year-olds.

12. A ration of shelled corn, cotton-seed meal and corn silage, without hay, proved to be the most efficient ration tested for fattening two year old steers, as shown by the rate of gain, cost of gain and finish of the cattle.

13. The addition of corn silage to a ration of shelled corn, cotton-seed meal and clover hay, resulted in a more rapid and cheaper gain, and a higher finish on the cattle.

14. Corn silage has a beneficial effect in causing cattle to shed their winter coat earlier than those receiving the same ration without the corn silage.

15. When corn silage is used there is a smaller consumption of grain than where it is omitted from the ration.

16. The addition of cotton-seed meal to a ration of shelled corn and clover hay, resulted in a more rapid and cheaper gain, a higher finish and a greater profit per steer.

17. The steers receiving cotton-seed meal and corn silage fattened more rapidly, required less feed in producing a pound of gain, attained a higher finish, distributed the fat more evenly over the carcass, had a higher market value, and returned a greater profit per head, than similar cattle fed without using these feeds.

18. The price received during the winter of 1908-9, per bushel of corn, fed in connection with clover hay, was 73.1 cents; in connection with clover hay and cotton-seed meal, 79.3 cents; in connection with clover hay, cotton-seed meal and corn silage, 85.8 cents; and in connection with cotton-seed meal and corn silage, 96.7 cents.

19. "Short fed" cattle consume a greater proportion of concentrates to roughage than "long fed" cattle.

20. "Short fed" cattle made a greater daily gain per head at a smaller cost per hundred than "long fed" cattle.

21. A greater margin is necessary to insure a profit from a feeding period of 180 days than from one of 120 days.

22. The margin necessary to prevent loss on "short fed" cattle was \$1.41 per hundred; on "long fed" cattle \$2.07 per hundred.

23. During the period when both lots of cattle were in the feed lot there was a greater profit from feeding heavy, fleshy feeders than from feeding lighter and thinner cattle. When the lighter cattle were fed two months longer, the profit per head and also on investment, was practically the same.

24. The corn fed to "short-fed" cattle had a feeding value of 80.3 cents per bushel or 25 cents more than the market value when fed; that fed to the "long fed" cattle, a value of 79.3 cents or 20.5 cents more than market value, when fed.

WINTER STEER FEEDING.

Unusual conditions have confronted cattle feeders throughout the state during the winter of 1908-9. The summer of 1908 was one of prolonged drought, which resulted in grass cattle failing to make normal gains and being sent to market in thinner condition than usual. The small yield and high market price of corn caused many feed lots to remain idle during the winter feeding season. Owing to depressed industrial conditions in the east the demand for finished cattle during the spring of 1909 was very meager. All of these conditions are in a measure responsible for general discouragement among feeders.

The results reported in this bulletin were secured under practical conditions, having to meet all the unfavorable influences which confronted feeders on their farms during this period. It is gratifying to know that a reasonable profit was secured from each lot which would indicate a period of greater prosperity for cattle feeders, who use judgment in selecting rations for fattening cattle under more favorable conditions.

In addition to the immediate profits secured, there was a large accumulation of manure in the feed lots. It is generally considered that the value of the manure is sufficient to balance the cost of labor in feeding, but the financial statements will show that all of the feeds used were charged at prices which included the cost of delivery to the elevator or warehouse, which would, under average conditions be equal to the cost of feeding. For this reason there is an additional profit equal to the value of the manure which should be added to that shown in financial statements.

In studying the results of experimental work in steer feeding it should always be remembered that one of the chief objects in feeding is to maintain soil fertility and increase the yield of succeeding crops by returning to the soil the greater proportion of the plant food contained in the feeds used for fattening purposes. Other sources of profit, such as the ability to select feeders of proper beef type and conformation, buy them at a favorable time, select rations which will produce maximum gains, utilize hogs to consume waste products of the feed lots, market cattle at just the right degree of condition for maximum profits, are generally recognized because of their direct bearing, but the cattle feeder who fails to consider the increased yields of crops due to rational preservation and care of manure, is not taking into account one of the greatest sources of revenue from fattening cattle.

OBJECT.

The object of this work was to obtain additional information on the problems in feeding beef cattle reported in Bulletins No. 129 and No. 130 of this Station on the following subjects: "The Influence of Age on Economy and Profit in Fattening Steers in Winter," "Corn Silage as a Roughage in Fattening Two Year Old Steers," "Cotton Seed Meal as a Supplement to Corn in Fattening Two Year Old Steers," "Results of Short vs. Long Feeding Periods." The purpose of this bulletin is to enable the cattle feeder to appreciate the various factors which have a bearing on the direct profits and losses in finishing cattle, such as age, type, condition and weight of steers as they go into the feed lot; the selection of rations which will produce cheap and rapid gains, with a high degree of finish; and the best use of farm grown feeds supplemented by commercial concentrates.

SHELTER, FEED LOTS AND WATER SUPPLY.

The lots in which the cattle were fed were 40 x 50 feet, with an open shed 12 x 40 feet on the west side of each lot. They were built up with cinders and gravel and sloped away from the sheds. No bedding was used in the lots. The sheds were kept as dry as possible by the use of a liberal amount of straw. The mild winter of 1908-9, together with a large amount of rain-fall, kept the lots muddy throughout a greater part of the time covered by the experiments. This undoubtedly, had some effect upon the cost of gains in the different lots. Water was supplied from the town water supply in galvanized iron tanks, set in the lots away from the sheds, protected by four or five inches of manure, outside of which was a wooden jacket one inch thick, and a cover, which was closed during extremely cold weather.

WEIGHING.

Each steer was given a numbered tag fastened on a strap around the neck, in order that a record of the individual gains could be kept. The cattle were weighed individually at 9:30 a. m. three consecutive mornings at the beginning and close of the experiment in order to obtain average weights, and at the end of each 30 day period. Each lot was weighed every 10 days in order to facilitate keeping records of feed consumed and gains made.

METHOD OF FEEDING.

The method of feeding was the same in all lots reported in this bulletin. Shelled corn was fed at 6.00 a. m. and at 4:30 p. m. in troughs in the open lot. Where cotton-seed meal was used, it was mixed thoroughly with the grain. After the cattle had cleaned up the grain ration, which usually required from a half to three-quarters of an hour, they were fed roughage in mangers in the open lot. When both hay and silage were used, the hay was fed in the morning and the silage in the evening. It was the intention at all times to feed in such a manner that there would be no waste. All feed was limited to such quantities as would be cleaned up readily. Salt was supplied at regular intervals.

QUALITY AND PRICE OF FEEDS USED.

The quality of the corn used throughout the winter of 1908-9 was exceptionally good. It was free from mouldy and chaffy kernels and would have graded No. 2. Cotton-seed meal, known as the Dixie brand, was guaranteed to contain 41 per cent. crude protein. It was of bright yellow color, free from mixture of hulls and of good flavor. The clover hay was generally of very good quality, fairly free from weeds and foreign grasses and of good color.

In order that a comparison of the cost of gains in this experiment may be made with those reported in previous bulletins,* it is necessary to fix upon some standard price. Through a series of years the average price of corn has been approximately 40 cents per bushel, cotton-seed meal \$28.00 and clover hay \$8.00 per ton, hence these prices have been used. As corn silage is not a commercial commodity, an arbitrary price of \$2.50 per ton has been used. This would be a fair estimate of its value as compared with corn at 40 cents per bushel from an average crop. These estimates of values are used only for comparative purposes.

In the financial statements, the current price paid for corn on the LaFayette market at the time it was fed, is used as its cost. The cotton-seed meal is given at \$28.00 per ton which is slightly in excess of its cost to the Station. Clover hay is estimated at \$8.00 per ton and corn silage at \$2.50 per ton. It should be stated that due to excessive drought, the corn which was used for making silage would have yielded only 10 bushels per acre which accounts for the low valuation of silage as compared with the price of corn in the financial statement.

*Bulletins No. 115, No. 129 and No. 130.

TABLE I.—Showing Average Analysis of Feeding Stuffs Used in Steer Feeding Experiments during Winter of 1908-9.

Material	Water Per cent.	Ash Per cent.	Crude protein Per cent.	Crude fiber Per cent.	Crude fat Per cent.	Nitrogen free extract Per cent.
Shelled corn.....	12.1	1.3	8.8	2.1	3.6	71.8
Cotton-seed meal..	7.1	7.0	37.0	6.6	9.9	32.4
Clover hay.....	12.4	5.4	8.7	22.4	1.5	49.5
Corn silage.....	69.0	1.7	2.0	7.3	.6	19.3

Table I shows the average analysis of all feeds used during the experiments reported in this bulletin. At regular intervals throughout the winter, samples of all the different feeds used were secured. These were analyzed by the Chemical Department. The average of all analyses of each feed used is given in Table I. It will be readily observed that corn silage contains a large amount of water in comparison with other feeds, due to the corn crop not being thoroughly ripened when harvested, and also, to its being stored in such manner as to prevent evaporation. As a general rule the more water a feed contains the less valuable it is for feeding purposes, but the succulence of silage has a value which is difficult to estimate in a financial way, by keeping the digestive system in good condition, improving the appetite and causing the coat to have a sleek, healthy appearance. The ash in the feed furnishes material for the production of bony structure and to some extent the various tissues and secretions of the body. Recent experiments in animal nutrition at other stations show that its functions are much more important than generally considered. There is nothing however, in the rations used in these experiments to indicate that there was not an abundance of ash fed in each lot. It should be noticed however, that both corn and corn silage are very deficient in ash as compared with cotton-seed meal and clover hay. Crude protein is one of the most important ingredients of a food stuff. It is essential for the formation of muscle, tissue, hair and bone, and for the secretion of digestive juices. It will be observed that the cotton-seed meal used contained 37 per cent. protein which gave it a very important place in the rations used in these experiments by furnishing protein. For some unexplained reason the clover hay used in this work was very deficient in protein as compared with that used in previous experiments. This may explain to some extent the fact that the clover fed lots did not make as good a showing as in previous years. Crude fiber is valuable in giving bulk to the ration and when di-

gested, serves the same purpose as nitrogen free extract. However in general, the amount of energy necessary to masticate, digest and carry it through the body is almost equal to the benefit secured. The proportion of crude fiber determines whether a feed should be classed as a roughage or a concentrate. Nitrogen free extract furnishes heat, energy and material from which body fat is built up. It is made up largely of starch, sugar and gums. Corn contains a very large proportion of this material, hence is the best feed for fattening purposes. Crude fat serves the same purpose as nitrogen free extract in furnishing heat, energy and fat for the animal body. In addition it has a beneficial effect upon the digestive tract if not fed in excessive quantities. It is considered two and one fourth times as valuable as nitrogen free extract.

In selecting rations for cattle, the amount of water, protein, crude fiber, nitrogen free extract and fat contained in the feeds should be considered as well as their digestibility, palatability, physiological effect and cost.

DESCRIPTION OF CATTLE.

The yearling and two year old cattle used in all lots were grade Angus steers purchased mainly in Lawrence county, Indiana. The calves were grade Angus, purchased in Howard county, Missouri. In the majority of cases they were of good quality from grade Angus cows, sired by pure bred bulls. They were not in as high condition as desirable on account of short pastures during the summer of 1908. This was especially true of the yearlings though they were of slightly better quality and type and more uniform than the two-year-olds. The calves were of the blocky, early-maturing type essential to the production of yearling beef.

VALUES OF CATTLE.

At the beginning of the experiments, J. T. Alexander, of the firm of Alexander, Ward and Conover, Chicago, and M. N. Parr of the firm of Valodin, Parr, Moffit and Company, Indianapolis, visited the feed lots where values were placed upon each lot on a basis of its value as feeders on those two markets. This was considered the initial value of the cattle at the beginning of the experiments. When the experiment closed, L. C. Conover and M. N. Parr of the same firms again valued the various lots on a basis of their selling value as fat cattle. From the final values a charge of 35 cents per hundred has been deducted to cover expenses incurred in shrinkage, loading, feed, yardage and commission, in order that the financial statements may be based upon weights secured in the feed lots without shrinkage or other variable factors.

PART I.

INFLUENCE OF AGE ON THE ECONOMY AND PROFIT OF FATTENING STEERS IN WINTER.

The report of the work on the "Influence of Age in Feeding Beef Cattle" given in Part I of this bulletin is a continuation of the work reported in Bulletin No. 129 issued by Purdue Experiment Station in October, 1908. The high prices of corn during the winter of 1908-9, together with industrial conditions at the time of the close of the experiment in May, 1909, were such that the demand for thick, heavy cattle was very greatly diminished, as compared with that of previous years at the same time. The market was demanding cattle that had not been carried to a very high degree of finish and that would also yield small cuts of beef. For this reason the showing in favor of the older cattle is not so favorable as it has been in the two preceding experiments. The method of experimentation has been similar to that followed in preceding years. Three lots of cattle, one each of calves, yearlings and two-year-olds were fed on a ration of shelled corn, cotton-seed meal and clover hay. The cattle used in this test were high grade Angus steers, the yearlings and two-year-olds being purchased in Lawrence county, Indiana, and the calves in Howard county, Missouri. They were of exceptionally good quality and type, but were thinner than is most desirable to have feeding cattle, at the time the experiment started. This was especially true of the yearlings. The two-year-olds averaged 966 pounds, the yearlings 684 pounds, and the calves 457 pounds, at the beginning of the test. They were of blocky, early maturing type, capable of being finished into cattle that would sell at highest market prices when properly finished. With very few exceptions they were sired by pure bred Angus bulls and from grade Angus cows. They were shipped to the Experiment Station two weeks before the experiment started and carried on pasture without grain during the interval. When first brought to the experimental lots they were given just enough grain that they might learn to eat from the trough before the experiment proper started. In this way weights were secured under normal conditions not influenced by the filling up process, which occurs after shipment. The results secured are based upon a six months winter feeding period at the end of which the two year old cattle were finished and marketed; the yearlings were fed one month, and the calves three months longer, in order that they might be marketed at the same degree of finish as was secured on the two year old cattle from six months feeding. The valuations given in the

financial statement are based upon the market values of the cattle at the beginning and end of the experiment, and show the relative difference in weight, quality and condition at the beginning and at the close in the various lots.

METHOD OF FEEDING.

The calves were started on a ration of 2 pounds shelled corn, .25 pound cotton-seed meal and 9 pounds clover hay; the yearlings on 6 pounds corn, .5 pound cotton-seed meal and 15 pounds clover hay, and the two-year-olds on 6 pounds corn, .5 pound cotton-seed meal and 20 pounds hay per head daily. The grain ration was gradually increased and hay fed according to the appetite in the various lots. At the end of 10 days the calves were consuming 5.5 pounds corn, 1 pound cotton-seed meal; the yearlings 9 pounds corn and 1.4 pounds cotton-seed meal, and the two-year-olds 10 pounds corn and 2 pounds cotton-seed meal per head daily. At the end of 30 days, the calves were consuming 8 pounds corn, 1.5 pounds cotton-seed meal; yearlings, 13 pounds corn, 2.4 pounds cotton-seed meal; the two-year-olds, 15 pounds corn and 2.8 pounds cotton-seed meal. At this time the cattle were all very nearly on full feed so that the increase in the grain ration from this time forward was much less rapid than during the first 30 days. At the end of the second month the grain ration had been increased 1 pound per head daily in each lot. By the end of the third month they were consuming as much as it was possible for them to eat in a half to three-quarters of an hour without leaving any in the trough.

Table II shows the average amount of feed consumed daily per head during each month throughout the six months feeding period. It will be noticed that the amount of feed consumed varied with the age of the cattle. During the first month the yearlings consumed per head daily 3.64 pounds shelled corn, .36 pound cotton-seed meal and 3.9 pounds clover hay more than the calves, and the two-year-olds, 1.35 pounds corn, .73 pound cotton-seed meal and 4.34 pounds clover hay more than the yearlings. During the sixth month the yearlings consumed per head daily 3.76 pounds shelled corn .8 pound cotton-seed meal more than the calves, while the two-year-olds consumed 2.67 pounds corn and .6 pound cotton-seed meal more than the yearlings, the amount of hay being the same in each of the three lots. A careful study of this table will show that the amount of hay consumed per head daily, by the calves decreased 1.89 pounds; by the yearlings, 5.78 pounds and by the two-year-olds, 10.12 pounds during the six months feeding period. The amount of grain consumed per head daily by the calves in-

TABLE II.—Showing Average Amount of Feed Consumed Daily per Head by Calves, Yearlings and Two-year-olds during Winter 1908-9.

Kind of Feed	Shelled corn	Cotton-seed meal	Clover hay
First month.....			
Calves.....	6.07 lbs.	1.15 lbs.	6.89 lbs.
Yearlings.....	9.71 "	1.51 "	10.79 "
Two-year-olds.....	11.06 "	2.24 "	15.13 "
Second month.....			
Calves.....	8.20 "	1.50 "	6.23 "
Yearlings.....	13.41 "	2.40 "	7.76 "
Two-year-olds.....	15.41 "	2.80 "	10.81 "
Third month.....			
Calves.....	9.03 "	1.59 "	6.70 "
Yearlings.....	14.28 "	2.59 "	7.86 "
Two-year-olds.....	17.30 "	2.99 "	9.89 "
Fourth month.....			
Calves.....	10.86 "	1.74 "	5.33 "
Yearlings.....	15.61 "	2.75 "	7.50 "
Two-year-olds.....	20.51 "	3.27 "	8.41 "
Fifth month.....			
Calves.....	12.78 "	1.99 "	5.00 "
Yearlings.....	16.81 "	2.80 "	6.00 "
Two-year-olds.....	20.06 "	3.40 "	7.33 "
Sixth month.....			
Calves.....	13.47 "	2.00 "	5.00 "
Yearlings.....	17.23 "	2.80 "	5.01 "
Two-year-olds.....	19.90 "	3.40 "	5.01 "
Average for six months.			
Calves.....	10.07 lbs.	1.38 lbs.	5.86 lbs.
Yearlings.....	14.51 "	2.51 "	7.48 "
Two-year-olds.....	17.37 "	3.01 "	9.48 "

creased 7.4 pounds, by the yearlings 7.42 pounds, and by the two-year-olds 8.84 pounds, showing that the consumption of hay decreased very rapidly according to the age of the cattle, while the consumption of grain increased during the six months feeding period. The amount of corn consumed by both calves and yearlings shows a consistent increase throughout the entire period. With the two year old cattle the grain increased during the first four months after which there was a gradual decrease in spite of the fact that the hay was decreased at the same time. This corresponds very closely with the results secured during preceding experiments, and shows that the maximum consumption of grain by two year old cattle occurs during the fourth month after the beginning of the feeding period, and from that time forward the decline is gradual. This is no doubt due to the fact that the steers are increasing in condition more rapidly than they are in size, hence the capacity for handling feed diminishes. With calves and yearlings which are being grown and fattened at the same time, the additional growth, increasing the capacity for feed, is more rapid than the finish secured, resulting in a gradual increased consumption of feed. During the whole period of six months the calves consumed an average of 10.07 pounds corn, 1.38 pounds cotton-seed meal and 5.86 pounds clover hay; the yearlings, 14.51 pounds corn; 2.51 pounds cotton-seed meal and 7.48 pounds clover hay; the two-year-olds, 17.37 pounds shelled corn, 3.01 pounds cotton-seed meal and 9.48 pounds clover hay.

TABLE III.—Showing Average Daily Gain per Steer by Months, during Winter 1908-9.

Average Daily Gain per Steer	Calves	Yearlings	Two-year-olds
First month.....	1.62 lbs.	1.87 lbs.	2.03 lbs.
Second month.....	2.27 "	2.85 "	2.10 "
Third month.....	1.83 "	2.31 "	2.60 "
Fourth month.....	2.11 "	2.38 "	2.35 "
Fifth month.....	2.41 "	3.05 "	2.38 "
Sixth month.....	1.74 "	1.54 "	2.15 "
Total period.....	2.00 lbs.	2.33 lbs.	2.27 lbs.

Table III shows the average daily gain per steer in each lot by months, also for the six months feeding period during the winter of 1908-9. It will be noticed that the results secured in this test

differ from those in the preceding tests reported in Bulletin No. 129, in that the yearlings made a slightly more rapid gain than was made by the two-year-olds during the six months period. This is no doubt due to the fact that they were in thinner condition at the time the experiment started, and had not attained the same degree of finish at the end of six months, both of which have a very profound influence on the rate of gain. On the calves and two-year-olds it will be seen that the rate of gain is relatively the same as in the preceding tests, the calves making an average throughout the entire period of 2 pounds per head daily and the two-year-olds, 2.27 pounds. The gains in all lots were very satisfactory when the conditions under which they were fed are considered. The excessive amount of rainfall and extremely muddy feed lots combined, must have had an unfavorable influence on the rate of gain in all lots.

TABLE IV.—Showing Average Amount of Feed Consumed per Pound of Gain by Calves, Yearlings and Two-year-olds during Winter 1908-9.

Kind of Feed	Shelled corn	Cotton-seed meal	Clover hay
Calves.....	5.03 lbs.	.83 lbs.	2.92 lbs.
Yearlings.....	6.21 "	1.07 "	3.20 "
Two-year-olds.....	7.63 "	1.32 "	4.12 "

Table IV showing the average amount of feed required to produce a pound of gain by cattle of different ages during the winter of 1908-9, indicates that the amount of feed required to produce a pound of gain increases with the age of the cattle. It required 118 pounds more of shelled corn, 24 pounds more of cotton-seed meal and 28 pounds more of clover hay to produce 100 pounds of gain on the yearlings than it did on the calves. The increase between yearlings and two-year-olds was 124 pounds corn, 25 pounds cotton-seed meal and 92 pounds clover hay. This shows that when the profits in feeding cattle depend almost wholly on the cost of gains, which is true when cattle are both produced and fed out by the same man, it is more profitable to feed the younger cattle. Where cattle feeding is separated from production, all feeders being purchased, the question of margins, length of feeding period and finish secured, as well as the cost of gains, determine the profits. The results here are very similar to those re-

ported in previous publications showing that the older the cattle when started into the feed lot, the greater will be the amount of feed required to produce a pound of beef.

TABLE V.—Showing Cost of Gains on Steers of Different Ages with Corn at Varying Prices.

Price of Corn	40c. per bu.	50c. per bu.	60c. per bu.	70c. per bu.
Cost of gain per cwt.* on				
Calves.....	\$5.92	\$ 6.82	\$ 7.72	\$ 8.62
Yearlings.....	\$7.22	\$ 8.33	\$ 9.43	\$10.54
Two-year-olds.....	\$8.98	\$10.35	\$11.71	\$13.08

*Based upon the following prices:

Cotton-seed meal@ \$28.00 per ton.
Clover hay@ \$ 8.00 per ton.

Table V shows the cost of gains on cattle of different ages with corn at prices varying from 40 to 70 cents per bushel, based upon the amount of feed required to produce a pound of gain as shown in Table IV. With corn at 40 cents per bushel, the difference between the cost of gains on calves and two-year-olds is \$3.06 per hundred. With corn at 70 cents per bushel the difference is \$4.46 per hundred. This would seem to indicate that the profits from feeding calves would be relatively greater when feeds are high, and partially accounts for the fact that the production of yearling beef is more popular during such times than the heavier grades. A careful study of this table will also show that an increase of 10 cents per bushel in the price of corn increases the cost of gain on calves 90 cents per hundred; on yearlings, \$1.11; and on two-year-olds, \$1.37 per hundred, when fed under similar conditions and on similar rations as used in this test.

It is necessary in studying the question of feeding cattle to consider many other phases aside from that of the cost of gains. It frequently happens that the margins between buying and selling prices due to a higher finish will offset the cheaper gains made, hence while the cost of gains has a very great influence upon the profits resulting from the operation, it is necessary to consider this question from every standpoint in order to form correct conclusions.

TABLE VI.—Showing Selling Price Necessary for Steers of Different Ages, Bought at Various Prices and Fed on Shelled Corn Cotton-seed Meal and Clover Hay during a Six Months Feeding Period.

Cost per Cwt.	Selling Price		
	Calves	Yearlings	Two-year-olds
corn @ 40c. per bu.*			
\$4.00	\$4.84	\$5.22	\$5.48
4.50	5.12	5.53	5.83
5.00	5.40	5.84	6.18
5.50	5.68	6.15	6.53
corn @ 50c. per bu.*			
\$4.00	\$5.24	\$5.64	\$5.89
4.50	5.52	5.95	6.24
5.00	5.80	6.26	6.59
5.50	6.08	6.57	6.94
corn @ 60c. per bu.*			
\$4.00	\$5.63	\$6.07	\$6.29
4.50	5.91	6.37	6.64
5.00	6.19	6.68	6.99
5.50	6.47	6.99	7.34
corn @ 70c. per bu.*			
\$4.00	\$6.03	\$6.49	\$6.70
4.50	6.31	6.80	7.05
5.00	6.58	7.11	7.40
5.50	6.86	7.41	7.75

*Based upon the following prices:

Cotton-seed meal@ \$28.00 per ton.
 Clover hay@ \$ 8.00 per ton.

Table VI showing the selling price necessary for cattle of different ages bought at various prices, and fed on shelled corn, cotton-seed meal and clover hay, during the six months feeding period brings out some very valuable information and is deserving of study. In this table the necessary selling price of cattle is given where they have cost from \$4.00 to \$5.50 per hundred and where

corn is worth from 40 to 70 cents per bushel, cotton-seed meal at \$28.00 per ton, clover hay at \$8.00 per ton, and also upon the amount of feed required to produce a pound of gain as indicated in Table IV, and the rate of gain indicated in Table III. With calves costing \$4.00 per hundred, it would be necessary to secure \$4.84, with corn at 40 cents per bushel; costing \$5.50, it would be necessary to secure \$6.86 per hundred, with corn at 70 cents per bushel, or a margin of 84 cents per hundred in the first instance as compared with one of \$1.46 in the second, during a six months feeding period; yearlings bought and fed under similar conditions would have to be sold at \$5.22 and \$7.41 with margins of \$1.22 and \$2.01; two-year-olds bought and fed under similar conditions would have to be sold at \$5.48 and \$7.75 per hundred with margins of \$1.48 and \$2.25. It will be noticed that the margin between buying and selling prices increases with the cost of corn per bushel. That is, a difference of 10 cents per bushel in the cost of corn increases the necessary selling price of calves 40 cents; of yearlings 42 cents and of two-year-olds, 45 cents per hundred. An increase of 50 cents per hundred in the initial cost of cattle will require a corresponding increase of 28 cents per hundred on the selling price of calves; 31 cents per hundred on yearlings and 35 cents per hundred on two-year-olds. The table also shows that calves costing \$4.00 per hundred and fed on corn at 40 cents per bushel, the necessary margin in feeding would be 84 cents per hundred. If they were bought at \$5.50 and fed corn at the same price, the necessary margin would have to be 28 cents per hundred. In other words, the greater the initial cost, other things being equal, the smaller would be the necessary margin in feeding cattle for market purposes. This has a very direct bearing upon the practice of handling well bred cattle as it shows that it will require less difference between their buying and selling prices in order to insure a profit, than it would with inferior cattle fed on the same kind of feeds at the same prices, and making equally as rapid gains. This table also shows very clearly that the margin between buying and selling prices of calves need not be so great as on older cattle in order to insure a profit from feeding.

FINANCIAL STATEMENTS.

It is a very difficult matter in experimental work to present a financial statement that will not be misleading. It seems to be necessary however, in reports on experimental feeding of beef cattle to present such statements in order that feeders may understand the different factors which control profits from feeding. It should be understood however, that the conditions prevailing in

the state are so variable that a statement which would be applicable to one section might be wholly misleading to another, due to local conditions which control the prices of feeding cattle, the feeds used and the final values of the cattle. The price of feeders and also of fat cattle may vary from 25 to 50 cents per hundred in different sections of the state at the same time, due to local demand, distance from market, condition of crops and amount of feed available in the locality. During the time required to conduct a cattle feeding experiment, the price of feeds may vary to such an extent that a financial statement based on the conditions prevailing at the beginning of the test would be greatly misleading at the close. For these reasons the relative rather than the actual profit or loss, between different cattle, fed under similar conditions should serve as a guide to operations in the feed lots.

The important questions determined in experimental work which may be used under all conditions are the relative rate of gain, feed required to produce a pound of gain, the finish of the cattle as shown by their selling value, the margin between cost and selling price, the amount of pork produced and the length of time necessary to attain a profitable finish, all of which have a definite bearing upon the financial outcome from feeding cattle under all conditions. It has been thought to reduce the financial statements in this bulletin to the "profit per steer," "price received per bushel of corn," "excess value over market value of corn per bushel" and "profit per dollar invested in cattle, hogs and feed during the feeding period," would present the information secured in the most plausible manner.

In the following financial statements, cotton-seed meal is valued at \$28.00 per ton; clover hay at \$8.00 per ton and corn at the average price per bushel paid by local elevators in LaFayette at the time the corn was fed, which varied during the feeding period from 52 to 67 cents, an average of approximately 60 cents per bushel. Hogs were used in this test in order to prevent waste of corn that would otherwise occur from feeding beef cattle. During a portion of the time it was necessary, on account of the condition of the feed lots, to give them a limited amount of corn aside from that furnished from the cattle feeding. An accurate record of this was kept and is included in the financial statement. There were two lots of hogs fattened to each lot of cattle; one lot being put in at the beginning of the experiment and remaining four months, when they were replaced with another lot of stock hogs which remained until the close of the experiment. They were valued at local market prices, both when they went into the feed lots and when they were removed. The initial and final market values were placed on the

cattle by competent commission men from Chicago and Indianapolis at the beginning and at the close of the experiment. From the final value per hundred a deduction of 35 cents per hundred has been made in order to cover the shrinkage from the feed lot to market, freight, feed, commission and yardage, hence the profits are based upon the weights in the feed lot without shrinkage.

One very interesting feature of the financial statements for the feeding experiments made during the winter of 1908-9 is the fact that there is a very material profit in each lot of cattle. This should be encouraging to cattle feeders as during this time the prices of feeds were exceptionally high and the market for fat cattle at the time the experiment closed was very much depressed. The cattle were also valued higher than their actual cost to the Station, when they were bought. For these reasons the profits have been secured under very unfavorable market conditions, and should prove greater under normal conditions. It should also be remembered that in every instance the market price of feeds used has been given as a basis instead of the price secured upon the farm and a further profit which has not been considered, should be made from the manure accumulated during so long a feeding period with this number of cattle. This, together with the labor necessary in marketing crops, has been allowed to overbalance the cost of feeding crops on the farm. The profit per steer varies from \$6.73 on calves up to \$12.80 per head on two-year-olds. The prices received per bushel of corn varied from 78.1 cents when fed to calves to 78.6 cents when fed to yearlings and 79.3 cents when fed to two-year-olds. The excess received over the market value per bushel at the time the corn was fed varied from 18.9 cents when fed to calves, to 20.3 cents when fed to yearlings, and 20.5 cents when fed to two-year-olds. The profit per dollar invested in cattle, hogs and feed for the six months varied from 12.5 per cent. on calves and two-year-olds to 13.7 per cent. on yearlings. The greater per cent. secured on the investment in yearlings was due to the fact that they were lighter in weight and valued less per hundred when the experiment started than the two year old cattle; hence did not require so great an initial investment. The actual margin secured from feeding calves amounted to \$1.65 per hundred; yearlings, \$2.15 and two-year-olds, \$2.20 per hundred during the six months, based upon values in the feed lots. The final values placed upon the cattle show that the two year old cattle were in the highest condition from a market standpoint, followed by the yearlings, which required another month and the calves which required three months to be made equally fat on the same feeds.

FINANCIAL STATEMENT—CALVES, 1908-9.

Nov. 18. To 20 calves, weight 9155 lbs. @ \$4.75 per cwt.....	\$ 434.86
Nov. 28. To 9 hogs, weight 1000 lbs. @ \$5.00 per cwt.....	50.00
Nov. 18-Dec. 18. To 3645 lbs. shelled corn @ 56c. per bu....	36.45
Dec. 18-Jan. 17. To 4925 lbs. shelled corn @ 52c. per bu....	45.72
Jan. 17-Feb. 16. To 5420 lbs. shelled corn @ 55c. per bu....	53.21
Feb. 16-Mar. 18. To 6520 lbs. shelled corn @ 59c. per bu....	68.68
Mar. 18. To 8 hogs, weight 800 lbs. @ \$6.25 per cwt.....	50.00
Mar. 18-Apr. 17. To 7670 lbs. shelled corn @ 60c. per bu....	82.17
Apr. 17-May 17. To 8085 lbs. shelled corn @ 67c. per bu....	96.92
Nov. 18-May 17. To 5991 lbs. cotton-seed meal @ \$28.00 per ton	83.87
Nov. 18-May 17. To 21,106 lbs. clover hay @ \$8.00 per ton....	84.42
Nov. 18-May 17. To 3595 lbs. shelled corn @ 60c. per bu. (fed to hogs)	38.46

Total expenditures	\$1124.76
Mar.18. By 9 hogs, weight 1980 lbs. @ \$6.75 per cwt.....	\$ 133.65
May 17. By 20 calves, weight 16,361.6 lbs. @ \$6.40 per cwt..	1047.14
May 17. By 8 hogs, weight 1125 lbs. @ \$7.00 per cwt.....	78.75

Total receipts	\$1259.54
Total profit	134.78
Profit per head	6.73
Price received per bushel for corn.....	78.1c.
Excess over market value of corn per bushel.....	18.9c.
Profit per dollar invested in cattle, hogs and feed for six months	12.5%

FINANCIAL STATEMENT—YEARLINGS, 1908-9.

Nov. 18. To 10 steers, weight 6846.6 lbs. @ \$4.40 per cwt....	\$ 301.25
Nov. 28. To 10 hogs, weight 1290 lbs. @ \$5.00 per cwt.....	64.50
Nov. 18-Dec. 18. To 2915 lbs. shelled corn @ 56c. per bu....	29.15
Dec. 18-Jan. 17. To 4025 lbs. shelled corn @ 52c. per bu....	37.37
Jan. 17-Feb. 16. To 4285 lbs. shelled corn @ 55c. per bu....	42.08
Feb. 16-Mar. 18. To 4685 lbs. shelled corn @ 59c. per bu....	46.15
Mar. 18. To 10 hogs, weight 1320 lbs. @ \$6.25 per cwt.....	82.50
Mar. 18-Apr. 17. To 5045 lbs. shelled corn @ 60c. per bu....	54.04
Apr. 17-May 17. To 5170 lbs. shelled corn @ 67c. per bu....	61.85
Apr. 18-May 17. To 4518 lbs. cotton-seed meal @ \$28.00 per ton	63.25
Nov. 18-May 17. To 13,479 lbs. clover hay @ \$8.00 per ton....	53.91
Nov. 18-May 17. To 3515 lbs. shelled corn @ 60c. per bu. (fed to hogs)	37.62
Total expenditures	\$ 873.67
Mar. 18. By 10 hogs, weight 2145 lbs. @ \$6.75 per cwt.....	\$ 144.78
May 17. By 10 steers, weight 11,053.3 lbs. @ \$6.55 per cwt...	723.97
May 17. By 10 hogs, weight 1620 lbs. @ \$7.00 per cwt.....	113.40
Total receipts	\$ 982.15
Total profit	108.48
Profit per head	10.84
Price received per bushel for corn fed	78.6c.
Excess over market value of corn per bushel	20.2c.
Profit per dollar invested in cattle, hogs and feed for six months	13.7%

FINANCIAL STATEMENT—TWO-YEAR-OLDS, 1908-9.

Nov. 18. To 10 steers, weight 9660 lbs. @ \$4.55 per cwt.....	\$ 439.53
Nov. 28. To 10 hogs, weight 1450 lbs. @ \$5.00 per cwt.....	72.50
Nov. 18-Dec. 18. To 3320 lbs. shelled corn @ 56c. per bu....	33.20
Dec. 18-Jan. 17. To 4625 lbs. shelled corn @ 52c. per bu....	42.94
Jan. 17-Feb. 16. To 5190 lbs. shelled corn @ 55c. per bu....	50.96
Feb. 16-Mar. 18. To 6155 lbs. shelled corn @ 59c. per bu....	64.84
Mar. 18. To 10 hogs, weight 1410 lbs. @ \$6.25 per cwt.....	88.62
Mar. 18-Apr. 17. To 6020 lbs. shelled corn @ 60c. per bu....	64.50
Apr. 17-May 17. To 5970 lbs. shelled corn @ 67c. per bu....	71.42
Nov. 18-May 17. To 5434 lbs. cotton-seed meal @ \$28.00 per ton	76.07
Nov. 18-May 17. To 17,078 lbs. clover hay @ \$8.00 per ton....	68.31
Nov. 18-May 17. To 3570 lbs. shelled corn @ 60c. per bu. (fed to hogs)	38.22
Total expenditures	\$1111.21
Mar. 17. By 10 hogs, weight 2600 lbs. @ \$6.75 per cwt.....	\$ 175.50
May 17. By 10 steers, weight 13,756.6 lbs. @ \$6.75 per cwt...	928.53
May 17. By 10 hogs, weight 1930 lbs. @ \$7.00 per cwt.....	135.10
Total receipts	\$1239.13
Total profit	127.92
Profit per steer	12.79
Price received per bushel for corn fed.....	79.3c.
Excess over market value per bushel.....	20.5c.
Profit per dollar invested in cattle, hogs and feed for six months	12.5%

**Summary of Results Secured during the Winter 1908-9 on the
Influence of Age on the Economy and Profit in Fattening
Steers Through a Period of Six Months.**

	Calves	Yearlings	Two-year-olds
Initial value per cwt....	\$4.75	\$4.40	\$4.55
Av. initial weight.....	457.7 lbs.	684.6 lbs.	966.0 lbs.
Av. final weight.....	818.0 "	1105.3 "	1375.6 "
Av. daily gain per steer	2.00 "	2.33 "	2.27 "
Av. daily feed per steer			
Shelled corn.....	10.07 "	14.51 "	17.37 "
Cotton-seed meal....	1.38 "	2.51 "	3.01 "
Clover hay.....	5.86 "	7.48 "	9.48 "
Av. feed required per pound gain:			
Shelled corn.....	5.03 "	6.21 "	7.63 "
Cotton-seed meal....	.83 "	1.07 "	1.32 "
Clover hay.....	2.92 "	3.20 "	4.12 "
Dry matter per pound gain.....	7.74 "	9.26 "	11.52 "
Cost per cwt. gain*....	\$7.72	\$9.43	\$11.71
Value per cwt. (in feed lots) after six months feeding.....	6.75	6.90	7.10
Profit per steer.....	6.73	10.84	12.80
Price received per bu. for corn.....	78.1c.	78.6c.	78.6c.
Excess over market value per bushel....	18.9c.	20.2c.	20.5c.
Profit per dollar invest- ed in cattle, hogs, and feed.....	12.5%	13.7%	12.5%

*Based upon shelled corn @ 80c. per bushel.

PART II.

CORN SILAGE, COTTON-SEED MEAL AND CLOVER HAY FOR FATTENING TWO YEAR OLD STEERS.

Part II of this bulletin is a report on the study of the value of rations containing silage, cotton-seed meal or clover hay and combinations of these feeds with shelled corn for fattening two year old steers. During the past three years the Station has been conducting a series of experiments along these lines, it having been determined that a nitrogenous supplement should be used in connection with corn silage, the ration composed of shelled corn, clover hay and corn silage, was omitted from the test during the winter of 1908-9 and in its place one composed of shelled corn, cotton-seed meal and corn silage without hay was substituted. Otherwise this work is a continuation of that carried on in previous years, and reported in bulletin No. 129. As the price of corn increases, it is necessary to so feed it that an adequate return will be made upon the investment in cattle and in feeds used in fattening them. The average consumer is paying the maximum price he can afford for meat under prevailing prices for labor. With these two facts in view it is necessary that the cattle feeder of the corn belt either select a ration that will produce beef more cheaply, secure feeders at prices lower than have prevailed in recent years, or quit handling beef cattle. The probability of securing cheaper feeders is small, as the cost of production is almost equal to the price received for cattle. In order to maintain the fertility of the soil, it is necessary for the major portion of the roughage and at least a part of the grain raised upon the farm to be fed to live stock and returned to the land. The supply of labor in this and adjoining states is such that it is almost impossible for men to go into the dairy business on an extensive scale where they have to depend entirely upon outside help. Hogs will consume grain and return an adequate profit where it is intelligently used but they are not adapted for handling large quantities of roughage which are produced on every farm. In many sections of the state it is impossible to engage in handling sheep on a very extensive scale, hence the farmer who produces large quantities of corn, clover, corn stover and straw, is forced to either market his crops, or feed them to beef cattle. It will be readily seen that the only course left is for feeders to select rations which will produce beef at a lower cost in order to enhance their profits.

With this object in view the tests reported in Part II of this bulletin were conducted. The following rations were used:

Shelled corn and clover hay.

Shelled corn, cotton-seed meal and clover hay.

Shelled corn, cotton-seed meal and corn silage.

Shelled corn, cotton-seed meal, clover hay and corn silage.

By using these combinations of feeds it is possible to determine the value of cotton-seed meal when added to a ration of corn and clover, of silage as a substitute for clover hay when fed with corn and cotton-seed meal, and of all four feeds used together. A detailed description of the cattle used, method of feeding and conditions under which these tests were conducted is given on page 9.

In order to present the results in such a way that they may be of the greatest use to feeders, it has been decided to show the amount of feed consumed daily per head, the rate and cost of gains and the total profit per steer, through a feeding period of six months.

Table VII shows the average amount of feed consumed daily per head by two year old steers fed on different rations. The lots were designated as Lots 1, 4, 5 and 6 at the beginning of the test. All lots received shelled corn, Lot 1 receiving cotton-seed meal and clover hay in addition; Lot 4, cotton-seed meal and corn silage; Lot 5, cotton-seed meal, clover hay and corn silage and Lot 6, clover hay without either cotton-seed meal or corn silage. During the first month the amount of grain consumed per head was practically the same in all lots. It will be seen that Lot 1 receiving 2.24 pounds cotton-seed meal per head consumed 15.31 pounds clover hay per head daily, while Lot 6 which was not fed a supplement, consumed 17.58 pounds. Lot 4 which was not fed hay, but in its place corn silage, consumed 43 pounds corn silage per head as compared with 15.31 pounds clover hay fed similar cattle in Lot 1, with the other feeds remaining the same. A further study of the table will show that Lot 5 was fed approximately one-half as much clover hay as Lot 1 and one-half as much corn silage as Lot 4. During the second month the grain ration was increased according to the appetite in each lot. It will be seen that Lot 4 receiving cotton-seed meal and corn silage consumed less corn than any other lot, followed very closely by Lot 5 fed clover hay in addition to cotton-seed meal and corn silage. The greatest consumption of grain was in Lot 6 which received clover hay without either of the other two feeds in connection with corn. The relative rate of difference in the amount of grain consumed continued throughout the test. During the progress of the feeding period the maximum amount of corn consumed by Lot 4 was

TABLE VII.—Showing Average Amount of Feed Consumed Daily per Head by Two Year Old Steers on Different Rations During a Six Months Feeding Period.

Ration	Lot 1 Shelled corn Cotton-seed meal Clover hay	Lot 4 Shelled corn Cotton-seed meal Corn silage	Lot 5 Shelled corn Cotton-seed meal Clover hay Corn silage	Lot 6 Shelled corn Clover hay
First month				
Shelled corn.....	11.06 lbs.	11.03 lbs.	11.03 lbs.	11.06 lbs.
Cotton-seed meal..	2.24 "	2.24 "	2.24 "	
Clover hay.....	15.31 "		8.28 "	17.58 "
Corn silage.....		43.00 "	21.46 "	
Second month				
Shelled corn.....	15.41 "	14.96 "	15.00 "	16.55 "
Cotton-seed meal..	2.80 "	2.78 "	2.80 "	
Clover hay.....	10.81 "		5.85 "	12.16 "
Corn silage.....		38.25 "	21.12 "	
Third month				
Shelled corn.....	17.30 "	15.85 "	16.08 "	21.33 "
Cotton-seed meal..	2.99 "	2.99 "	2.99 "	
Clover hay.....	9.89 "		5.03 "	9.24 "
Corn silage.....		35.00 "	17.66 "	
Fourth month				
Shelled corn.....	20.51 "	16.88 "	19.26 "	26.55 "
Cotton-seed meal..	3.27 "	3.27 "	3.27 "	
Clover hay.....	8.41 "		4.26 "	8.00 "
Corn silage.....		25.00 "	13.00 "	
Fifth month				
Shelled corn.....	20.06 "	18.58 "	19.73 "	21.10 "
Cotton-seed meal..	3.40 "	3.40 "	3.40 "	
Clover hay.....	7.33 "		3.80 "	7.66 "
Corn silage.....		20.00 "	10.00 "	
Sixth month				
Shelled corn.....	19.90 "	17.60 "	19.90 "	21.35 "
Cotton-seed meal..	3.40 "	3.34 "	3.40 "	
Clover hay.....	5.01 "		2.50 "	5.01 "
Corn silage.....		15.71 "	7.80 "	
Average for six months.				
Shelled corn.....	17.37 lbs.	15.81 lbs.	16.83 lbs.	19.29 lbs.
Cotton-seed meal..	3.01 "	3.00 "	3.01 "	
Clover hay.....	9.48 "		4.96 "	9.94 "
Corn silage.....		29.49 "	15.34 "	

19 pounds per head daily at any one time. The maximum amount consumed by Lot 5, 21 pounds; by Lot 1, 21.5 pounds and by Lot 6 was 23 pounds per head daily. The amount of grain consumed in the various lots shows that the greatest amount was consumed by Lot 6 followed by Lots 1, 5 and 4 in the order named. Cotton-seed meal was fed in practically the same quantity in Lots 1, 4 and 5. The amount of roughage when reduced to air dry basis was practically the same in all lots. It would seem safe to conclude from this test when considered in connection with results reported in Bulletin No. 129, that the addition of corn silage to the ration in fattening cattle, reduces the amount of grain consumed.

TABLE VIII.—Showing Average Daily Gain per Head by Two Year Old Steers Fed on Different Rations Through a Six Months Feeding Period; Winter, 1908-9.

Ration	Lot 1	Lot 4	Lot 5	Lot 6
	Shelled corn; Cotton-seed meal Clover hay	Shelled corn; Cotton-seed meal Corn silage	Shelled corn Cotton-seed meal Clover hay Corn silage	Shelled corn Clover hay
First month.....	2.03 lbs.	2.61 lbs.	1.68 lbs.	.83 lbs.
Second month.....	2.10 "	2.60 "	2.72 "	2.45 "
Third month.....	2.60 "	2.25 "	2.15 "	2.50 "
Fourth month.....	2.35 "	2.00 "	2.75 "	2.80 "
Fifth month.....	2.38 "	3.45 "	2.62 "	1.30 "
Sixth month.....	2.15 "	1.95 "	2.10 "	1.47 "
Average for six months	2.27 lbs.	2.58 lbs.	2.33 lbs.	1.89 lbs.

Table VIII shows the average daily gain per head by steers in the various lots. It will be seen that the results attained by the cattle varied inversely to the amount of grain consumed, the greatest gain having been made by Lot 4 followed by Lots 5, 1 and 6 respectively. A study of this table shows that the ration of shelled corn, cotton-seed meal and corn silage proved to be the most efficient as far as the rate of gain was concerned. It should be remembered, however, that this is a report of a single test made with a limited number of cattle and that further experimental work may modify the results secured with this combination of feeds. The relative rate of gain, however, between Lots 1, 5 and 6 is similar to that secured in the preceding years with the same feeds showing that the addition of cotton-seed meal to a ration composed of shelled corn and clover hay will cause a greater increase in live weight than where it is not

used, and that the addition of corn silage to a ration composed of shelled corn, cotton-seed meal and clover hay will result in more rapid gains on the steers fed.

TABLE IX.—Showing Average Amount of Feed and Dry Matter Consumed and also Cost per Pound of Gain by Two Year Old Steers on Different Rations.

Ration	Lot 1	Lot 4	Lot 5	Lot 6
	Shelled corn Cotton-seed meal Clover hay	Shelled corn Cotton-seed meal Corn silage	Shelled corn Cotton-seed meal Clover hay Corn silage	Shelled corn Clover hay
Feed consumed per pound gain				
Shelled corn.....	7.63 lbs.	6.11 lbs.	7.19 lbs.	10.15 lbs.
Cotton-seed meal..	1.32 "	1.16 "	1.29 "	
Clover hay.....	4.12 "		2.12 "	5.23 "
Corn silage.....		11.39 "	6.55 "	
Dry matter consumed per pound gain...	11.52 "	9.98 "	11.34 "	13.50 "
Cost per cwt. gain*..	\$11.44 "	\$9.39 "	\$10.93	\$12.35

*Based upon actual market values when fed as follows:

Shelled corn @ 53.1c. per bushel.
Cotton-seed meal @ \$28.00 per ton.
Clover hay @ \$8.00 per ton.
Corn silage @ \$2.50 per ton.

Table IX shows the average amount of feed and dry matter consumed; also the cost per pound of gain on two year old steers fed on different rations. The amount of feed consumed per pound of gain could be determined from the preceding tables but is presented here in order that a fuller discussion of the results may be given. It will be seen that the feeding of 132 pounds of cotton-seed meal in Lot 1 in connection with shelled corn and clover hay resulted in a saving of 252 pounds shelled corn and 111 pounds clover hay, in producing 100 pounds gain; that the substitution of 655 pounds corn silage in Lot 4 for 200 pounds clover hay resulted in a saving of 44 pounds shelled corn and 3 pounds cotton-seed meal; that the substitution of 1139 pounds of corn silage in Lot 5 for 412 pounds clover hay resulted in a saving of 152 pounds shelled corn and 16 pounds cotton-seed meal in producing 100 pounds gain. In addition to the saving of feeds made by these various lots of cattle on account of cotton-seed meal and corn silage being added to the rations, there was a further profit due to higher finish attained, as shown by the in-

crease in value per hundred of beef on foot in the financial statements. Estimating feeds at their market values during the time in which they were fed, Table X shows that the cheapest gain was made by Lot 4 fed on corn silage in connection with shelled corn and cotton-seed meal without hay; the most expensive gains being made by Lot 6 fed on shelled corn and clover hay without either cotton-seed meal or silage. The amount of dry matter consumed per pound of gain varied in this test with the rate of gain; the least amount of dry matter being required by cattle making the most rapid gains and the greatest amount by those making the slowest gains. The results secured from the use of rations in Lots 1, 5 and 6 are similar to those secured from the use of similar rations in preceding tests, hence the conclusion would be justified that the addition of corn silage and cotton-seed meal to a ration of shelled corn and clover hay will result in a more rapid gain, a cheaper gain with feeds at present prices and a higher finish on the cattle. It should be remembered in considering the cost of gains in the various lots that they were made where conditions were not the most favorable, using a long feeding period and making the cattle thoroughly fat, both of which factors tend to increase the cost of gains. If the experiment had closed a month earlier, the amount of feed and dry matter as well as the cost in producing gains would have been less in every instance. This is one point that is essential for the cattle feeder to consider closely when comparing the results of gains made under different conditions; that is, that the condition of the cattle both at the beginning and the close of an experiment has a very great influence upon the cost of gains.

TABLE X.—Showing Influence of Price of Feeds on the Cost of Gain by Two Year Old Steers Fed Different Rations.

Ration	Lot 1 Shelled corn Cotton-seed meal Clover hay	Lot 4 Shelled corn Cotton-seed meal Corn silage	Lot 5 Shelled corn Cotton-seed meal Corn silage Clover hay	Lot 6 Shelled corn Clover hay
Cost of gain per cwt.*	\$8.98	\$7.41	\$8.61	\$9.35
Additional cost per cwt. due to an in- crease of 10c. per bushel in price of corn	\$1.36	\$1.07	\$1.28	\$1.81
Additional cost per cwt. due to an in- crease of 10c. per cwt. in price of cot- ton-seed meal.....	13.2c.	11.6c.	12.9c.	
Additional cost per cwt. due to an in- crease of 10c. per cwt. in price of clover hay	41.6c.		21.2c.	50c.
Additional cost per cwt. due to an in- crease of 50c. per ton in price of corn silage		28.4c.	16.3c.	

*Based upon the following prices:

Shelled corn	@ 40c. per bushel.
Cotton-seed meal	@ \$28.00 per ton.
Clover hay	@ \$ 8.00 per ton.
Corn silage	@ \$ 2.50 per ton.

Table X shows the influence of the price of feeds on the cost of gains on two year old steers. In order that a comparison may be made between cattle fed at different times and under different conditions, it is necessary to assume an average valuation for the various feeds used. In estimating the cost of gain per hundred given at the beginning of the table, the prices used, 40 cents per bushel for corn, \$28.00 per ton for cotton-seed meal, \$8.00 per ton for

clover hay and \$2.50 per ton for corn silage, were an average of prices through the period of 10 or more years. At the above prices the cost of gains in Lot 1, was \$8.98; in Lot 4, \$7.41; in Lot 5, \$8.61 and in Lot 6, \$9.35 per hundred. By increasing the cost of corn 10 cents per bushel it will be seen that the increased cost of gains was \$1.36 per hundred in Lot 1; \$1.07 in Lot 4; \$1.28 in Lot 5 and \$1.81 in Lot 6. By increasing the price of cotton-seed meal \$2.00 per ton the cost of gains was increased 13.2 cents per hundred in Lot 1; 11.6 cents in Lot 4; and 12.9 cents in Lot 5. By increasing the price of clover hay \$2.00 per ton the cost of gains was increased 41.6 cents per hundred in Lot 1; 21.2 cents in Lot 5 and 50 cents in Lot 6. An increase of 50 cents per ton in the price of silage would have increased the cost of gains 28.4 cents per hundred in Lot 4, and 16.3 cents in Lot 5. By using the figures presented in this table it would be possible to estimate the cost of gains per hundred weight with the four feeds used and at any price quoted in future years. It should be remembered in considering a bulletin like this, that conditions under which feeding is done are continually changing; hence it is necessary to be able to seek out factors which have a direct bearing upon the financial outcome and interpret them in such manner that they may be applied to market conditions differing from those present when the experiment was conducted.

LOT 1.

FINANCIAL STATEMENT—TEN STEERS FED SHELLED CORN, COTTON-
SEED MEAL AND CLOVER HAY.

Nov. 18. To 10 steers, weight 9660 lbs. @ \$4.55 per cwt.....	\$ 439.53
Nov. 2. To 10 hogs, weight 1450 lbs. @ \$5.00 per cwt.....	72.50
Nov. 18-Dec. 18. To 3320 lbs. shelled corn @ 56c. per bu....	33.20
Dec. 18-Jan. 17. To 4625 lbs. shelled corn @ 52c. per bu....	42.94
Jan. 17-Feb. 16. To 5190 lbs. shelled corn @ 55c. per bu....	50.96
Feb. 16-Mar. 18. To 6155 lbs. shelled corn @ 59c. per bu....	64.84
Mar. 18. To 10 hogs, weight 1410 lbs. @ \$6.25 per cwt.....	88.62
Mar. 18-Apr. 17. To 6020 lbs. shelled corn @ 60c. per bu....	64.50
Apr. 17-May 17. To 5970 lbs. shelled corn @ 67c. per bu....	71.42
Nov. 18-May 17. To 5434 lbs. cotton-seed meal @ \$28.00 per ton	76.07
Nov. 18-May 17. To 17,078 lbs. clover hay @ \$8.00 per ton....	68.31
Nov. 18-May 17. To 3570 lbs. shelled corn @ 60c. per bu. (fed to hogs)	38.22
Total expenditures	\$1111.21
Mar. 17. By 10 hogs, weight 2600 lbs. @ \$6.75 per cwt.....	\$ 175.50
May 17. By 10 steers, weight 13,756 lbs. @ \$6.75 per cwt.....	928.53
May 17. By 10 hogs, weight 1930 lbs. @ \$7.00 per cwt.....	135.10
Total receipts	\$1239.13
Total profit	127.92
Profit per steer	12.79
Price received per bushel for corn fed.....	79.3c.
Excess over market value	20.5c.
Profit per dollar invested in cattle, hogs and feed.....	12.5%

LOT 4.

FINANCIAL STATEMENT—TEN STEERS FED SHELLED CORN, COTTON-
SEED MEAL AND CORN SILAGE.

Nov. 18. To 10 steers, weight 9621.6 lbs. @ \$4.55 per cwt.....	\$ 437.78
Nov. 28. To 10 hogs, weight 1440 lbs. @ \$5.00 per cwt.....	72.00
Nov. 18-Dec. 18. To 3310 lbs. shelled corn @ 56c. per bu....	33.10
Dec. 18-Jan. 17. To 4490 lbs. shelled corn @ 52c. per bu....	41.68
Jan. 17-Feb. 16. To 4755 lbs. shelled corn @ 55c. per bu....	46.48
Feb. 16-Mar. 18. To 5065 lbs. shelled corn @ 59c. per bu....	53.35
Mar. 18. To 10 hogs, weight 1250 lbs. @ \$6.25 per cwt.....	78.12
Mar. 18-Apr. 17. To 5575 lbs. shelled corn @ 60c. per bu....	59.53
Apr. 17-May 17. To 5280 lbs. shelled corn @ 67c. per bu....	63.92
Nov. 18-May 18. To 5413 lbs. cotton-seed meal @ \$28.00 per ton	75.78
Nov. 18-May 17. To 53,090 lbs. corn silage @ \$2.50 per ton..	66.36
Nov. 18-May 17. To 3570 lbs. shelled corn @ 60c. per bu....	38.22

Total expenditures	\$1066.32
Mar. 18. By 10 hogs, weight 2630 lbs. @ \$6.75 per cwt.....	\$ 177.52
May 18. By 10 steers, weight 14,280 lbs. @ \$6.90 per cwt.....	985.32
May 17. By 10 hogs, weight 1685 lbs. @ \$7.00 per cwt.....	118.65

Total receipts	\$1281.49
Total profit	215.17
Profit per steer	21.51
Price received per bushel for corn fed.....	96.7c.
Excess over market value per bushel.....	37.6c.
Profit per dollar invested in cattle, hogs and feed for six months	21.7%

LOT 5.

FINANCIAL STATEMENT—TEN STEERS FED SHELLED CORN, COTTON-SEED MEAL, CLOVER HAY AND CORN SILAGE.

Nov. 18. To 10 steers, weight 9631.6 lbs. @ \$4.55 per cwt...	\$ 438.23
Nov. 28. To 10 hogs, weight 1290 lbs. @ \$5.00 per cwt.....	64.50
Nov. 18-Dec. 18. To 3310 lbs. shelled corn @ 56c. per bu.....	33.10
Dec. 18-Jan. 17. To 4500 lbs. shelled corn @ 52c. per bu....	42.79
Jan. 17-Feb. 16. To 4825 lbs. shelled corn @ 55c. per bu....	52.88
Feb. 16-Mar. 18. To 5780 lbs. shelled corn @ 59c. per bu....	60.89
Mar. 18. To 10 hogs, weight 1150 lbs. @ \$6.25 per cwt.....	71.87
Mar. 18-Apr. 17. To 5920 lbs. shelled corn @ 60c. per bu....	63.42
Apr. 17-May 17. To 5970 lbs. shelled corn @ 67c. per bu....	71.42
Nov. 18-May 17. To 5434 lbs. cotton-seed meal @ \$28.00 per ton	76.07
Nov. 18-May 17. To 8130 lbs. clover hay @ \$8.00 per ton....	35.72
Nov. 18-May 17. To 27,617 lbs. corn silage @ \$2.50 per ton....	34.52
Nov. 18-May 17. To 3570 lbs. shelled corn @ 60c. per bu. (fed to hogs)	38.22

Total expenditures\$1083.63

Mar. 18. By 10 hogs, weight 2640 lbs. @ \$6.75 per cwt.....	\$ 178.20
May 17. By 10 steers, weight 13,843.3 lbs. @ \$6.80 per cwt..	941.34
May 17. By 10 hogs, weight 1730 lbs. @ \$7.00 per cwt.....	121.10

Total receipts\$1241.64

Total profit 158.01

● Profit per steer	15.80
Price received per bushel for corn fed	85.8c.
Excess over market value per bushel.....	26.1c.
Profit per dollar invested in cattle, hogs and feed for six months	15.6%

LOT 6.

FINANCIAL STATEMENT—TEN STEERS FED SHELLED CORN AND
CLOVER HAY.

Nov. 18. To 10 steers, weight 9646.6 lbs. @ \$5.55 per cwt.....	\$ 438.92
Nov. 28. To 10 hogs, weight 1450 lbs. @ \$5.00 per cwt.....	72.50
Nov. 18-Dec. 18. To 3320 lbs. shelled corn @ 56c. per bu....	33.20
Dec. 18-Jan. 17. To 4965 lbs. shelled corn @ 52c. per bu....	46.10
Jan. 17-Feb. 16. To 6400 lbs. shelled corn @ 55c. per bu....	63.34
Feb. 16-Mar. 18. To 7310 lbs. shelled corn @ 59c. per bu....	77.03
Mar. 18. To 10 hogs, weight 1190 lbs. @ \$6.25 per cwt.....	74.37
Mar. 18-Apr. 17. To 6331 lbs. shelled corn @ 60c. per bu....	67.08
Apr. 17-May 17. To 6405 lbs. shelled corn @ 67c. per bu....	77.22
Nov. 18-May 17. To 17,902 lbs. clover hay @ \$8.00 per ton....	71.60
Nov. 18-May 17. To 3570 lbs. shelled corn @ 60c. (fed to hogs)	38.22

Total expenditures	\$1059.58
Mar. 18. By 10 hogs, weight 2750 lbs. @ \$6.75 per cwt.....	\$ 185.62
May 17. By 10 steers, weight 13,063.3 lbs. @ \$6.55 per cwt....	855.64
May 17. By 10 hogs, weight 1675 lbs. @ \$7.00 per cwt.....	117.25

Total receipts	\$1158.51
Total profit	98.93
Profit per steer	9.89
Price received per bushel for corn fed.....	73.1c.
Excess over market value per bushel corn fed.....	14.3c.
Profit per dollar invested for cattle, hogs and feed for six months	10%

In studying the financial statements the same consideration should be made as in those presented in connection with the influence of age in Part I. It will be seen from this test that the feeds are charged at the prices prevailing at the time they were fed, corn varying from 52 to 67 cents per bushel. Cotton-seed meal and clover hay were given at an average price during the time they were fed. Corn silage was estimated at \$2.50 per ton. This may seem to be too low a valuation for silage in comparison with corn, but owing to the severe and prolonged drought during the summer of 1908 in the section in which the Station is located, the yield of corn was very low. The field from which corn silage was cut would have yielded not to exceed 10 bushels per acre. For this reason the price of corn silage is estimated at \$2.50 per ton. If corn had been an average crop so that the ears would have been developed in proportion to the stalk it would have been necessary to consider silage at approximately \$3.50 per ton instead of \$2.50 in comparison with the price of corn given in the financial statement. As in the case of all other feeds used, the price of silage is given a maximum figure in order that the profits resulting from the feeding of the cattle may not appear abnormal. In order that the results may be more fully understood the profits are given, not only per head but also distributed over the amount of corn fed and for further convenience, as the interest on the investment throughout the period. In this way the feeder has three ways to estimate his ultimate profit. One is the profit per steer, another, the excess over market value for corn fed, and a third, the interest received on the investment for the six months feeding period. It should be remembered in studying the financial statements that these experiments were conducted under anything but favorable conditions for the feeding of beef cattle. The cattle themselves were thinner than is most desirable, when the experiment started; they were carried to a very high degree of finish on feeds that were excessively high in price and were sold on a market that was not favorable for heavy, well-finished cattle. The feed lots were muddy throughout the entire period covered by the experiment. For these reasons the profits secured should be greater, rather than less, under more favorable conditions than those indicated in the financial statements. The smallest profit made was from the use of a ration composed of shelled corn and clover hay without either nitrogenous supplement or corn silage. However, even in this lot the interest on the dollar invested for six months would amount to 10.4 per cent. The profit per steer was \$9.89, or if all the profits were given to the corn fed, the average price received would be 14.3 cents per bushel more than that paid on the local market. This, the poorest showing made in any lot, is equal to the average profit se-

cured from growing a crop of corn, hence it would be logical to conclude that the profits from feeding a crop of corn to beef cattle may prove to be even greater than those secured from growing it. The greatest profit was obtained in Lot 4 fed on shelled corn, cotton-seed meal and corn silage. This amount, \$21.50 per steer, was 21.7 per cent. on the money invested for the six months feeding period. The excess over market value received per bushel for corn in the lot was 36.6 cents giving it a total value for feeding purposes under the conditions prevailing during the winter of 1908-9 of 96.7 cents per bushel. The profits from feeding this lot of cattle might be considered in another way. By distributing the difference in the total profit secured from Lot 1 and from Lot 4, it would amount to \$3.29 per ton profit for each ton of corn silage used, giving it a feeding value of \$5.79 per ton. The profit on Lot 5 where both silage and cotton-seed meal were used in connection with shelled corn, was greater than that received in Lot 1 where cotton-seed meal alone was used, and still greater than in Lot 6 where neither of the feeds were used. A comparison of the financial statements of Lots 1 and 6 will show that the use of 5434 pounds cotton-seed meal in connection with shelled corn and clover hay resulted in a profit of \$28.99.

In considering the financial statements it should be remembered that the chief profit from handling beef cattle in the corn belt comes from the maintenance and upbuilding of the fertility of the soil where a rational system of handling and using the manure is followed. In the experiments here reported this is not taken into consideration in any way so that the feeder who is interested in building up his land may add an additional profit almost equal to that represented in these tables from the additional yield secured in corn, wheat, oats and grass by the handling of beef cattle on his farm.

Summary of Results of Winter Feeding of Two Year Old Steers on Different Rations.

Ration	Lot 1 Shelled corn Cotton-seed meal Clover hay	Lot 4 Shelled corn Cotton-seed meal Corn silage	Lot 5 Shelled corn Cotton-seed meal Clover hay Corn silage	Lot 6 Shelled corn Clover hay
Initial value per cwt.	\$4.55	\$4.55	\$4.55	\$4.55
Av. initial weight...	966 lbs.	962.1 lbs.	963.1 lbs.	964.6 lbs.
Av. final weight....	1375.6 "	1428 "	1384.3 "	1306.3 "
Av. daily gain per steer	2.27 "	2.58 "	2.33 "	1.89 "
Total feed consumed				
Shelled corn.....	31,280 "	28,475 "	30,305 "	34,731 "
Cotton-seed meal..	5434 "	5413 "	5434 "	
Clover hay.....	17,078 "		8930 "	17,902 "
Corn Silage.....		53,090 "	27,617 "	
Av. daily feed per steer				
Shelled corn.....	17.37 "	15.81 "	16.83 "	19.29 "
Cotton-seed meal..	3.01 "	3 "	3.01 "	
Clover hay.....	9.48 "		4.96 "	9.94 "
Corn silage.....		29.49 "	15.34 "	
Av. feed consumed per pound of gain				
Shelled corn.....	7.63 "	6.11 "	7.19 "	10.15 "
Cotton-seed meal..	1.32 "	1.16 "	1.29 "	
Clover hay.....	4.12 "		2.12 "	5.23 "
Corn silage.....		11.39 "	6.55 "	
Dry matter per pound gain	11.52 "	9.98 "	11.34 "	13.50 "
Cost per cwt. gain..	\$11.44	\$9.39	\$10.93	\$12.35
Selling value of cattle in feed lots without shrinkage after six months feeding	\$6.75	\$6.90	\$6.80	\$6.55
Profit per steer.....	\$12.79	\$21.51	\$15.80	\$9.89
Price received per bushel for corn*...	79.3c.	96.7c.	85.8c.	77.1c.
Excess over market value	20.5c.	37.6c.	26.1c.	14.3c.
Per cent. on investment for 6 months in cattle, hogs and feed	12.5%	21.7%	15.6%	10.4%

*Based upon the following prices:

Cotton-seed meal.....	@ \$28.00 per ton.
Clover hay.....	@ \$ 8.00 per ton.
Corn silage.....	@ \$ 2.50 per ton.

PART III.

RESULTS OF SHORT VS. LONG FEEDING PERIODS.

The condition of the fat cattle market during the winter of 1908-9 has been exceptionally favorable to feeders who have marketed their cattle from 30 to 60 days before they were finished. The demand for cheap, light cuts of beef has been so urgent and that for the thick, heavy and more expensive cuts, so light, that the finishing of cattle has been a venture of doubtful financial merit. This will no doubt stimulate the tendency already formed in recent years to shorten the feeding period. Steers that are to be given a short feed should have reached something near maturity before the feeding period, and carry as much flesh as possible, made from grass or other cheap feeds, in order that they may make cheap, rapid and economical gains. A greater proportion of concentrated feeds and a smaller proportion of roughage must be used in fattening, than where a longer feeding period is used in fattening lighter and thinner cattle.

The information presented in Part III of this bulletin is based upon the feeding of two lots of cattle during the winter of 1908-9 and is a continuation of the work reported in Bulletin No. 130 issued from the Station in November, 1908. Where the commercial side of the cattle feeding problem is made the basis of experimental work, as has been largely true in the long vs. short feeding period used in the experimental feed lots, there is of necessity a much greater need of duplication of work owing to the fluctuation in the price of cattle and feeds and in the demand for the finished product than where the rate of gain and feed consumed in producing beef is being studied aside from a commercial standpoint. The results presented here should be considered as a report of progress, as the data accumulated up to this time has not involved the use of a sufficient number of cattle nor a consideration of the markets through so long a series of years as is necessary before final conclusions may be drawn. The feeds used, their prices, shelter, feed lots, and water supply were the same as that reported on page 6 in Part I to which the reader is referred for further information.

The cattle used in the lot fed six months were high grade two year old Angus steers produced almost wholly on roughage and grass without grain in any form before the experiment started. They weighed at the beginning of the test 966 pounds and were in about average condition of the feeding cattle usually used in the feed lots in the corn belt. The cattle fed four months had had practical-

ly the same previous treatment and averaged 1140 pounds in weight at the beginning of the test. They were also high grade Angus steers, possibly 30 months old at the beginning of the test and were in higher condition than those used for long feeding. The cattle were all of a slightly higher grade than those used in the preceding tests, being a little nearer the ideal beef type and possessing more quality. They were shipped to the Experiment Station 10 days before the experiment began and were given all the clover hay they would eat in order that they might overcome any tendency to fill before the experiment proper was started. The experiment began on November 17, 1908. The "short-fed" lot was fed until March 17 and the "long-fed" lot until May 16, 1909. Shelled corn, cotton-seed meal and clover hay were used as a ration in each lot.

METHOD OF FEEDING.

The "long-fed" cattle were started on 6 pounds shelled corn, .5 pound cotton-seed meal and 20 pounds clover hay per head daily, the "short-fed" cattle, on 8 pounds shelled corn, 1.3 pounds cotton-seed meal and 16 pounds clover hay per head daily. At the end of the first 10 day period, the "long-fed" cattle were consuming 10 pounds shelled corn, 2 pounds cotton-seed meal and 18 pounds clover hay; the "short-fed" cattle 14 pounds shelled corn, 2.5 pounds cotton-seed meal and 14 pounds clover hay. By the end of the first month the "long-fed" cattle were consuming 15 pounds shelled corn, 2.8 pounds cotton-seed meal and 14 pounds clover hay; the "short-fed" cattle, 19 pounds shelled corn, 4 pounds cotton-seed meal and 14 pounds clover hay. This shows that the method of feeding was to give the "short-fed" cattle a more concentrated ration in which they would consume a greater proportion of shelled corn and cotton-seed meal as compared with the amount of clover hay than with the "long-fed" lot. In the "short-fed" lot it was necessary to limit the amount of roughage in order to insure a maximum consumption of grain. In the "long-fed" lot the amount of grain was limited and roughage fed according to appetite.

TABLE XI.—Showing Average Amount of Feed Consumed and Daily Gain per Head during a Short vs. Long Feeding Period.

	Feed Consumed			
	Shelled corn	Cotton-seed meal	Clover hay	Daily gain per head
First month.				
Long-fed	11.06 lbs.	2.24 lbs.	15.13 lbs.	2.03 lbs.
Short-fed	13.86 "	3.11 "	14.80 "	2.35 "
Second month.				
Long-fed	15.41 "	2.80 "	10.81 "	2.10 "
Short-fed	20.39 "	4.26 "	9.93 "	2.71 "
Third month.				
Long-fed	17.30 "	2.99 "	9.89 "	2.60 "
Short-fed	23.94 "	4.26 "	8.04 "	2.86 "
Fourth month.				
Long-fed	20.51 "	3.27 "	8.41 "	2.35 "
Short-fed	24 "	4.26 "	7.02 "	2.76 "
Av. for four months.				
Long-fed	16.07 "	2.82 "	11.06 "	2.27 "
Short-fed	20.52 "	3.97 "	9.95 "	2.67 "
Fifth month.				
Long-fed	20.06 "	3.40 "	7.33 "	2.38 "
Sixth month.				
Long-fed	19.90 "	3.40 "	5.01 "	2.15 "
Av. for six months				
Long-fed	17.37 "	3.01 "	9.48 "	2.27 "

Table XI shows the average amount of feed consumed and the daily gain per head for each lot of cattle during the time they were in the feed lot. During the first month the "short-fed" cattle consumed 2.8 pounds shelled corn and .87 pound cotton-seed meal more, and .53 pound clover hay less per head than was consumed by the "long-fed" cattle. During the second month they consumed 4.98 pounds shelled corn and 1.46 pounds cotton-seed meal more and .88 pound clover hay less per head daily. This same proportion is noticeable throughout the four months when both lots of cattle were in the feed lot. During that time the "long-fed" cattle consumed an average of 16.07 pounds shelled corn; 2.82 pounds cotton-

seed meal and 11.06 pounds clover hay; the "short-fed" cattle, 20.52 pounds shelled corn, 3.97 pounds cotton-seed meal and 9.95 pounds clover hay. During the same period the "long-fed" cattle gained 2.27 pounds per head daily while the "short-fed" cattle gained 2.67 pounds. At the close of the fourth month the "short-fed" cattle were marketed and the "long-fed" cattle were continued in the feed lot for 60 days. The main difference in the rations for the two lots of cattle was that the "short-fed" cattle consumed a greater amount of shelled corn and cotton-seed meal per head in proportion to clover hay than did the "long-fed" cattle. This compares very favorably with the results reported from previous experiments.*

The table also shows that there was a gradual increase in the amount of grain consumed by the "short-fed" cattle from the time they went into the feed lot until they were sold, that the maximum amount of grain consumed by the "long-fed" cattle was reached during the fourth month of the feeding period after which there was a gradual decline. This is true not only of this experiment but of those reported previously, showing that the "short-fed" cattle had been marketed before they were finished as the total amount of grain consumed by the steers when on full feed begins to decrease as the steers become thickly fattened.

The "short-fed" cattle made a more rapid gain while in the feed lot than did the thinner and lighter cattle fed under similar conditions through a longer period. This may be accounted for from the fact that the "short-fed" cattle had about reached their limit of growth, their capacity for feed had been developed in greater proportion to their weight, and they were not fed to quite so high a degree of finish on a much more concentrated and more easily digested ration than was used in the "long-fed" lot, all of which tends to increase the rate of gain. Previous experiments have shown similar results as to the rate of gain.

*Bulletin No. 130, Page 287.

TABLE XII.—Feed, Dry Matter and Cost per Pound Gain, in Short vs. Long Feeding Periods.

Feed consumed per pound of gain	Long-fed		Short-fed
	120 days.	180 days.	120 days.
Shelled corn.....	7.07 lbs.	7.63 lbs.	7.68 lbs.
Cotton-seed meal....	1.24 "	1.32 "	1.48 "
Clover hay.....	4.87 "	4.12 "	3.51 "
Dry matter consumed per pound of gain.	11.60 "	11.52 "	11.15 "
Cost of gain per cwt*...	\$10.73 "	\$11.44 "	\$11.19 "

*Based upon market value of feed when used.

Table XII shows the amount of feed and dry matter consumed and the cost per hundred weight of gain. It will be noticed that during the first 120 days when both lots were being fed at the same time, that the "long-fed" cattle which were started in the experiment at a lighter weight and in much thinner condition, required less concentrated feed to produce a pound gain than was required by the "short-fed" cattle. When the amount of feed required to produce a pound gain by the "long-fed" cattle is compared with that required by the "short-fed" cattle, during the entire period in each lot, it will be seen that there was a difference in favor of the "short-fed" cattle. In comparing the amount of dry matter required to produce a pound of gain during the first 120 days with that required in the full period of 180 days in the "long-fed" lot, it will be seen that it was less for the whole period than during the first four months of feeding. This is due to increasing the proportion of concentrated feed during the last two months and decreasing the proportion of roughage. As roughage contains a small amount of digestible nutrients, as compared to concentrates, and requires a large amount of energy on the part of the steer in handling it, the amount of dry matter required to produce a pound of gain from roughage is much greater than from concentrates. The smaller the amount of dry matter required in the "short-fed" lot as compared with the "long-fed" is doubtless due to the same causes as given for the difference in the two periods in the "long-fed" lot. That is, the steers were not carried to so high a condition and their rations consisted very largely of concentrated feed which would naturally produce gains at a cheaper cost from the standpoint of dry matter. The cost of gains per hundred for the first 120 days in the "long-fed" lot was \$10.73,

for the total period \$11.44, while it was \$11.19 in the "short-fed" lot for 120 days. The cost of gains corresponds with the results secured during the two preceding years of experimental work on this subject and shows that as the feeding period progresses, the cost of gains increases. The financial statements used with the "long-fed" cattle are divided into two periods. One of 120 days during which time the "short-fed" cattle were in the feed lot and one of 180 days or the total length of the long feeding period. It will be noticed that the cattle were valued 20 cents per hundred higher in the "short-fed" lot than in the "long-fed" lot at the beginning of the experiment. After 120 days feeding the difference was 35 cents per hundred in favor of the "short-fed" lot. This shows that the heavier and older cattle when given a full feed of grain will make a more rapid increase in value per pound while in the feed lot than the lighter and younger cattle which require a longer feed. The increase in value per hundred by the "short-fed" cattle from the time they were put into the feed lot until they were sold, was \$1.70 per hundred or 42.5 cents per hundred per month. With the "long-fed" cattle the increase was \$2.20 per hundred or 55 cents per month during the six months feeding period. During the 120 days while both lots were fed, the "long-fed" cattle increased \$1.55 per hundred or 36 cents per month. The fact that the "short-fed" cattle increase more rapidly per hundred during the first four months of feeding is due very largely to their making a more rapid gain and attaining a higher finish in the same length of time. The "long-fed" cattle when fed for six months, however, made a greater proportional increase in value than the "short-fed" cattle due to their attaining a higher finish at marketing than was attained by the "short-fed" cattle, and also to the fact that there was an increase in value of cattle on the general market of 50 cents per hundred between the time the "short-fed" and "long-fed" cattle were sold. This is a condition that usually occurs in that season of the year.

The financial statements show a comparatively large profit in both lots, whether fed for 120 days or for 180 days. The profit per steer in the "short-fed" lot was \$12.54 giving a return upon the money invested during the four months time of 12.7 per cent. If the total profit were distributed over the total amount of corn fed it would amount to 25.6 cents per bushel, giving it a feeding value of 80.3 cents per bushel. During the same period the "long-fed" cattle returned a profit of \$9.65 per head, 11.5 per cent. on the money invested or 24.2 cents per bushel of corn which would have given the corn a feeding value of 79.4 cents. This is practically the same as the results secured from feeding the heavier and fleshier cattle

FINANCIAL STATEMENT—"LONG-FED" CATTLE, 1908-9.
(First 120 days.)

Nov. 18. To 10 steers, weight 9660 lbs. @ \$4.55 per cwt.....	\$ 439.53
Nov. 18. To 10 hogs, weight 1450 lbs. @ \$5.00 per cwt.....	72.50
Nov. 18-Dec. 18. To 3320 lbs. shelled corn @ 56c. per bu....	33.20
Dec. 18-Jan. 17. To 4625 lbs. shelled corn @ 52c. per bu....	42.94
Jan. 17-Feb. 19. To 5190 lbs. shelled corn @ 55c. per bu....	50.96
Feb. 16-Mar. 18. To 6155 lbs. shelled corn @ 59c. per bu....	64.84
Nov. 18-Mar. 18. To 3394 lbs. cotton-seed meal @ \$28.00 per ton	47.51
Nov. 18-Mar. 18. To 13,273 lbs. clover hay @ \$8.00 per ton....	53.09
Nov. 18-Mar. 18. To 2990 lbs. shelled corn @ 56c. per bu. (fed to hogs)	29.90
Total expenditures	\$ 834.47
Mar. 18. By 10 steers, weight 12,385 lbs. @ \$6.10 per cwt....	\$ 755.48
Mar. 18. By 10 hogs, weight 2600 lbs. @ \$6.75 per cwt.....	175.50
Total receipts	\$ 930.98
Total profit	96.51
Profit per steer	9.65
Price received per bushel for corn fed.....	79.4c.
Excess over market value	24.2c.
Profit per dollar invested in cattle, hogs and feed.....	11.5%

in comparison with the lighter and thinner ones in the winters of 1906-7 and 1907-8. In every instance it has been more profitable to give the heavier cattle the "short-fed" than it has been to carry the lighter and thinner cattle along at the same time. The profit resulting however, from a comparison of the 180 day feeding period on the "long-fed" cattle is much more favorable to those given the long feed. The total profit from six months feeding period was \$12.79 per steer, 12.5 per cent. on the money invested or 20.5 cents on a bushel of corn fed, giving the corn a feeding value of 79.3 cents per bushel.

FINANCIAL STATEMENT—"LONG-FED" CATTLE, 1908-9.
(180 days.)

Nov. 16. To 10 steers, weight 9660 lbs. @ \$4.55 per cwt.....	\$ 439.53
Nov. 28. To 10 hogs, weight 1450 lbs. @ \$5.00 per cwt.....	72.50
Nov. 18-Dec. 18. To 3320 lbs. shelled corn @ 56c. per bu....	33.20
Dec. 18-Jan. 17. To 4625 lbs. shelled corn @ 52c. per bu....	42.94
Jan. 17-Feb. 16. To 5190 lbs. shelled corn @ 55c. per bu....	50.96
Feb. 16-Mar. 18. To 6155 lbs. shelled corn @ 59c. per bu....	64.84
Mar. 18. To 10 hogs, weight 1410 lbs. @ \$6.25 per cwt.....	88.62
Mar. 18-Apr. 17. To 6020 lbs. shelled corn @ 60c. per bu....	64.50
Apr. 17-May 17. To 5970 lbs. shelled corn @ 67c. per bu....	71.42
Nov. 18-May 17. To 5434 lbs. cotton-seed meal @ \$28.00 per ton	76.07
Nov. 18-May 17. To 17,078 lbs. clover hay @ \$8.00 per ton..	68.31
Nov. 18-May 17. To 3570 lbs. shelled corn @ 60c. per bu. (fed to hogs)	38.22

Total expenditures	\$1111.21
Mar. 17. By 10 hogs weight 2600 lbs. @ \$6.75 per cwt.....	\$ 175.50
May 17. By 10 steers, weight 13,756 lbs. @ \$6.75 per cwt.....	928.53
May 17. By 10 hogs, weight, 1930 lbs. @ \$7.00 per cwt.....	135.10

Total receipts	\$1239.13
Total profit	129.92
Profit per steer	12.79
Price received per bushel for corn fed.....	79.3c.
Excess over market value	20.5c.
Profit per dollar invested in cattle, hogs and feed.....	12.5%

FINANCIAL STATEMENT—"SHORT-FED" CATTLE, 1908-9.
(120 days.)

Nov. 18. To 15 steers, weight 17,110 lbs. @ \$4.75 per cwt.....	\$ 812.72
Nov. 18. To 15 hogs, weight 1750 lbs. @ \$5.00 per cwt.....	87.50
Nov. 18-Dec. 18. To 6240 lbs. shelled corn @ 56c. per bu....	52.40
Dec. 18-Jan. 17. To 9175 lbs. shelled corn @ 52c. per bu....	85.17
Jan. 17-Feb. 16. To 10,775 lbs. shelled corn @ 55c. per bu....	105.82
Feb. 16-Mar. 18. To 10,800 lbs. shelled corn @ 59c. per bu....	113.75
Nov. 18-Mar. 18. To 7161 lbs. cotton-seed meal @ \$28.00 per ton	100.25
Nov. 18-Mar. 18. To 17,115 lbs. clover hay @ \$8.00 per ton..	71.66
Nov. 18-Mar. 18. To 4215 lbs. shelled corn @ 56c. per bu. (fed to hogs)	42.15

Total expenditures	\$1481.42
Mar. 18. By 15 steers, weight 21,925 lbs. @ \$6.45 per cwt...	\$1414.16
Mar. 18. By 15 hogs, weight 3785 lbs. @ \$6.75 per cwt.....	255.49

Total receipts	\$1669.65
Total profit	188.23
Profit per steer	12.54
Price received per bushel for corn fed.....	80.3c.
Excess over market value per bushel.....	25.6c.
Profit per dollar invested in cattle, hogs and feed (4 months)	12.7%

In considering the financial statements presented in connection with the long vs. short feeding periods during the winter of 1908-9 it should be remembered that thick, heavy cattle such as were produced by giving the long feeding period were very unpopular at the time the "long-fed" cattle were marketed; the demand at that time being for lighter cattle not carrying so high a degree of finish. For this reason the total profit on the long feeding was much less than it would be under more nearly normal conditions, hence no definite nor final conclusions in regard to this matter can be given at this time.

Summary Long vs. Short Feeding Period. Winter 1908-9. "Long-fed," 10 steers. "Short-fed," 15 steers.

	130 days	180 days	190 days
Initial value per cwt...	\$4.55	\$4.55	\$4.75
Av. initial weight.....	966 lbs.	966 lbs.	1140 lbs.
Av. final weight.....	1238.5 "	1375.6 "	1461.6 "
Av. daily gain per head	2.27 "	2.27 "	2.67 "
Total feed consumed			
Shelled corn.....	19,290 "	31,280 "	36,990 "
Cotton-seed meal....	3394 "	5434 "	7161 "
Clover hay.....	13,273 "	17,078 "	17,915 "
Av. daily feed per steer			
Shelled corn.....	16.07 "	17.37 "	20.52 "
Cotton-seed meal....	2.82 "	3.01 "	3.97 "
Clover hay.....	11.06 "	9.48 "	9.95 "
Feed required per pound gain			
Shelled corn.....	7.07 "	7.63 "	7.68 "
Cotton-seed meal....	1.24 "	1.32 "	1.48 "
Clover hay.....	4.87 "	4.12 "	3.51 "
Dry matter per pound gain	11.60 "	11.52 "	11.15 "
Cost of gain per cwt...	10.73 "	11.44 "	11.19 "
Necessary selling price per cwt.....	\$5.91	\$6.62	\$6.16
Value of cattle in feed lots without shrinkage at close of period....	\$6.10	\$6.75	\$6.45
Profit per steer.....	\$9.65	\$12.79	\$12.54
Price received per bushel for corn.....	79.4c.	79.3c.	80.3c.
Excess over market value	24.2c.	20.5c.	25c.
Profit per dollar invested in cattle, hogs and feeds.....	11.5c.	12.5c.	12.7c.

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PURDUE UNIVERSITY

Agricultural Experiment Station

BULLETIN No. 137, VOL. XV

NOVEMBER, 1909

DAIRY BY-PRODUCTS AS SUPPLEMENTS TO CORN FOR FATTENING HOGS

- Part 1. A Comparison of Shelled Corn and Skim-milk with Shelled Corn and Rape for Fattening Hogs.**
- Part II. A Comparison of Skim-milk, Linseed Meal, Tankage, Soy Bean Meal and Middlings as Supplements to Corn Meal for Fattening Hogs.**
- Part III. A Comparison of Shelled Corn, Shelled Corn and Tankage and Shelled Corn and Butter milk for Fattening Hogs.**
- Part IV. A Comparison of Skim-milk, Linseed Meal and Soy Bean Meal as Supplements to Corn Meal for Fattening Hogs.**
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DAIRY BY-PRODUCTS AS SUPPLEMENTS TO CORN FOR FATTENING HOGS

J. H. SKINNER

W. A. COCHEL

SUMMARY

Experiments I and II

1. Skim-milk was more efficient than rape as a supplement to shelled corn as shown by the rate of gain, cost of gain, degree of finish and profit.

2. Feeding skim-milk as a supplement to shelled corn resulted in the production of 18.1 pounds to 22.1 pounds of pork from a bushel of corn.

Using rape as a forage crop resulted in the production of 12.1 pounds to 14.1 pounds of pork from a bushel of corn.

Experiment III

3. Skim-milk, tankage, linseed meal, soy bean meal and middlings proved to be very efficient supplements to corn meal.

4. Hogs fed on corn meal and skim-milk, consumed more feed, made a greater increase in live weight with a smaller amount of feed and dry matter and at less expense than similar lots fed on corn meal supplemented by tankage, linseed meal, soy bean meal or middlings.

5. Tankage ranked second to skim-milk, followed very closely by middlings, soy bean meal and linseed meal as supplements to corn meal.

6. There was less cash outlay for tankage than for any other commercial nitrogenous feed, and a greater proportion of corn could be used with it.

7. The value of skim-milk was found to be:

26.5c.	per	cwt.	as	compared	with	linseed meal.....	@	\$1.50
24	c.	"	"	"	"	soy bean meal.....	@	\$1.50
22.9c.	"	"	"	"	"	tankage	@	\$2.00
28	c.	"	"	"	"	middlings	@	\$1.25

Experiment IV

8. Tankage fed dry proved to be an efficient supplement to shelled corn.

9. The gain per bushel of corn

fed alone was.....	12.6 pounds.
fed with tankage.....	17.0 "
fed with butter milk.....	22.6 "

10. The use of 7.25 pounds of butter milk resulted in a saving of 1.96 pounds shelled corn or .82 pound shelled corn and .36 pound tankage; and the use of .36 pound tankage resulted in a saving of 1.14 pounds shelled corn in producing one pound of pork.

Experiment V

11. A mixture of corn meal and soy bean meal was more efficient in producing pork than one of corn meal and linseed meal.

12. Corn meal and skim-milk were more efficient in producing pork than either corn meal and linseed meal or corn meal and soy bean meal.

DAIRY BY-PRODUCTS AS SUPPLEMENTS TO CORN FOR FATTENING HOGS

During recent years there has been a large number of feeding experiments conducted at the Station with a view to determining practical methods of supplementing corn with commercial feeding stuffs, dairy by-products, seeds from leguminous plants and different kinds of pasture, both for the maintenance of brood sows and growing pigs and for fattening hogs for market. Two publications have recently been issued, Bulletin No. 108, "Soy Beans, Middlings and Tankage as Supplemental Feeds in Pork Production" and Bulletin No. 126, "Supplements to Corn for Fattening Hogs in Dry Lot."

In this bulletin will be found the results of experiments with fattening hogs where dairy by-products have been compared with commercial feeds. In many sections of the state, farmers are beginning to turn their attention to dairying, hence desire information as to the best methods of utilizing dairy by-products. This development is logical where labor is plentiful and the income from a small area of land must be increased. During recent years the price of corn has advanced until many farmers consider it more profitable to sell both corn and hogs than to feed them. This is true only of those who have been accustomed to feeding "straight corn" without supplements of any sort. The results presented in the following pages show that there is almost invariably a profit from fattening hogs where an intelligent use has been made of nitrogenous feeds in connection with corn.

OBJECT

1. The primary object of this series of experiments was to determine the value of skim-milk and of butter milk as supplements to corn in pork production.
2. To compare dairy by-products with home-grown and commercial nitrogenous concentrates.
3. To encourage farmers to make better use of the by-products of the dairy and creamery.
4. To further emphasize the deficiency of corn as a sole ration for pork production and to demonstrate how it may be used more economically and still result in a greater financial return.

FEEDS USED

The feeds used were shelled corn, corn meal, skim-milk, butter milk, middlings, tankage, linseed oil meal, soy bean meal and rape. The shelled corn and corn meal were of average quality purchased on the local market. The skim-milk was secured from the University farm and fed directly after separating. The butter milk came

from the University creamery. As churning was done only three days per week, it was necessary to keep a sufficient quantity from each churning to last until the next, varying from four to six feeds. The middlings were of excellent quality purchased upon the local market. The tankage, purchased from Rauh and Sons and from Swift & Co., was guaranteed to contain 60 per cent. protein. The linseed meal was old process meal purchased from the American Linseed Co., and was of good quality. The soy beans were grown on the University farm and finely ground at the local mill.

FEEDING

The different lots were fed twice daily, the amount fed being governed largely by appetite, but each feed given in such quantity that it would be cleaned up within one-half hour. A sufficient amount of trough space was used so that each hog had ample opportunity to obtain its share of feed without undue crowding. All lots were given sufficient room for exercise and shelter from wind and rain. Where ground feed was used, the corn meal and supplements were mixed together in bulk in the proportion in which they were to be fed. Just before feeding the amount to be fed to each lot was weighed out, mixed with water so as to form a thick slop and fed in round-bottomed, galvanized iron troughs, 12 inches across the top and six inches deep. When shelled corn was used it was fed in such a manner that there would be no waste. When tankage was used in connection with shelled corn it was fed dry in a separate trough. The proportion of supplements used in connection with corn varied in different trials, according to the age, weight, condition and previous treatment of the hogs before entering the experiments, so that reference will have to be made to the tables in the following pages to determine just the amount used.

ANIMALS USED IN THE TESTS

The hogs used were thrifty and healthy in every instance, mostly bred and raised on the University farm. They were sired by pure-bred boars and from Berkshire, Poland-China, Yorkshire or cross-bred sows. In each test the hogs in different lots were as nearly equal in age, weight, breeding, quality, condition and previous treatment as it was possible to make them at the beginning of the experiment. As the lots, shelter, method of feeding and the weather were similar in each test, the differences reported may be attributed to the kinds of feed used. In every instance the test continued throughout a sufficient length of time to give the hogs a marketable finish in order that the results secured might be made applicable to average farm conditions throughout the state.

PART I

A COMPARISON OF SHELLED CORN AND SKIM-MILK WITH SHELLED CORN AND RAPE FOR FATTENING HOGS

In order that the results from feeding dairy by-products should not be confined entirely to winter feeding, two lots of hogs were used during the summers of 1906 and 1907 in making a comparison of skim-milk and rape pasture as a supplement to shelled corn in fattening growing pigs. The lots fed shelled corn and skim-milk were not given access to green feed in any form during the tests, but were furnished with ample shelter from the sun, and room for exercise.

The other lots were allowed to graze on rape at all times. Both lots were given all the shelled corn they would consume and an abundant supply of water. Although rape is generally considered one of the most valuable forage crops that can be grown for hogs, the results reported in the following pages are not so favorable to it as they would be from feeding shelled corn and rape in comparison with straight corn, instead of in comparison with shelled corn and skim-milk.

Experiment I

The pigs used in this experiment consisted of two Yorkshires, two Poland-Chinas and one Berkshire in each lot, ranging in age from eight to 12 weeks at the beginning of the test. They had previously been fed on skim-milk, middlings and shelled corn, and were started in the experiment on June 26, 1906. Lot 1 averaged at the beginning of the test 68.2 pounds and Lot 2, 65 pounds per head. Lot 1 was fed shelled corn and skim-milk in a dry lot in the proportion of one part shelled corn to three parts skim-milk by weight, as compared with Lot 2, fed shelled corn on rape pasture. The rape was drilled in rows 20 inches apart and had been given two cultivations. It furnished an abundance of forage for five pigs during the 90 day period.

TABLE I.—Showing Weights, Gains, Feeds Consumed and Cost of Gains in Feeding Skim-milk in Comparison with Rape.

June 26—Sept. 24, 1906. (90 days).

Ration	Lot 1 (6 pigs) Shelled corn Skim-milk	Lot 2 (6 pigs) Shelled corn Rape pasture
Average weight at beginning.....	68.2 lbs.	65 lbs.
Average weight at close.....	178 "	138.6 "
Total gain.....	549 "	368 "
Average gain per head.....	109.8 "	73.6 "
Average daily gain per head.....	1.22 "	.81 "
Total feed consumed.....	1389 " shelled corn 4167 " skim-milk	1461.25 " shelled corn
Average daily feed per head.....	3.08 " shelled corn 9.26 " skim-milk	3.24 " shelled corn
Average feed per pound gain.....	2.53 " shelled corn 7.59 " skim-milk	3.97 " shelled corn
Gain per bushel corn fed.....	22.1 "	14.1 "
Cost of grain for 100 lbs. gain with corn @ 40c. per bushel.....	\$1.80	\$2.83
@ 50c. per bushel.....	2.29	3.50
@ 60c. per bushel.....	2.78	4.17

Table I shows the average weight at the beginning and close of the experiment, gains, feed consumed and cost of gains. A study of this table will show that pigs fed shelled corn and skim-milk made decidedly greater gains during the summer season than pigs similar in every respect fed shelled corn on rape pasture. Not only was the rate of gain greater but the amount of corn required to produce a pound of gain was 1.44 pounds less where fed with skim-milk than where fed with rape pasture. For each bushel of corn fed, the pigs receiving skim-milk gained 22.1 pounds, while those receiving rape gained 14.1 pounds. The cost of the shelled corn necessary to produce 100 pounds of pork was \$1.03 less when fed with skim-milk than when fed on rape. Estimating skim-milk at 20 cents per hundred, the total cost of feeds per 100 pounds gain in the dry lot was 48 cents greater than the total cost of grain alone with rape as a forage crop. In other words, the use of rape resulted in a saving of 48 cents per hundred in producing pork. With corn at 50 cents per bushel and skim-milk at 25 cents per hundred, the saving would be 64 cents per hundred. The result of this test would indicate that the greater gain made by the pigs fed on shelled corn and skim-milk was sufficient to offset the difference in the cost of gains by the use of shelled corn and rape.

Experiment II

Feeling that the results of one year's work might be misleading, it was deemed advisable to duplicate the experiment during the summer of 1907. The rations were similar to those used during the preceding year, except that shelled corn and skim-milk were fed in equal parts by weight instead of one part of shelled corn to three parts of milk. Otherwise, the feeding was similar in every respect. Twelve pigs, largely Berkshire and cross-bred Berkshire-Yorkshire were used in this test. They were farrowed in the fall of 1906 and carried through the winter on a maintenance ration of shelled corn, middlings and bran. During the month of April, they received a small amount of tankage in connection with their mixed feed, the average amount of feed consumed being 2.33 pounds per head daily. They were thrifty, growthy shoats, not too fat to make good use of their feed during the succeeding months.

TABLE II.—Showing Weights, Gains, Feeds Consumed and Cost of Gains in Feeding Skim-milk in Comparison with Rape.

June 17—Aug. 7, 1907. (50 days.)

Ration	Lot 1 (6 pigs) Shelled corn Skim-milk	Lot 2 (6 pigs) Shelled corn Rape pasture
Average weight at beginning.....	151.9 lbs.	152 lbs.
“ “ close.....	230.5 “	200.8 “
Total gain.....	472	293
Average gain per head.....	78.6	48.8 “
Average daily gain per head.....	1.57	.97 “
Total feed consumed.....	1456 “ shelled corn	1319 “ shelled corn
Daily feed per head.....	1456 “ skim-milk	4.39 “ shelled corn
Feed per pound gain.....	4.85 “ shelled corn	4.50 “ shelled corn
Gain per bushel of corn fed.....	4.85 “ skim-milk	12.1 “
Cost of grain for 100 lbs. gain with corn @ 40c. per bushel.....	3.08 “ shelled corn	\$3.21
“ @ 50c. per bushel.....	3.08 “ skim-milk	4.06
“ @ 60c. per bushel.....	18.1	4.93
	\$2.20	
	2.75	
	3.30	

Table II shows the average weight at the beginning and close of the test, feed consumed and cost of gains. The results are similar to those secured in the preceding test, showing that hogs fed on shelled corn and skim-milk made decidedly greater gains, while the amount of grain required to produce a pound of gain was greater when rape was used as a supplement instead of skim-milk. The saving of corn due to feeding shelled corn and skim-milk in comparison with shelled corn and rape amounted to 142 pounds in producing 100 pounds of pork, with a difference of \$1.01 per hundred in cost with corn at 40 cents per bushel or \$1.31 with corn at 50 cents per bushel. This would be assuming that rape was equally as expensive as skim-milk. With skim-milk at 20 cents per hundred and corn at 40 cents per bushel, the total cost of producing 100 pounds gain in a dry lot was \$2.81; where no allowance, whatever, was made for the use of rape, the cost was \$3.21 per hundred or a saving of 40 cents per hundred by using skim-milk. With corn at 50 cents per bushel, the difference in favor of skim-milk would be 55 cents in producing 100 pounds pork allowing nothing for rape, but simply charging up the value of corn used. The results of these two experiments are contradictory to those generally cited as average,* where it was shown that the use of rape pasture would result in a very material saving of grain for pork production. The experiments reported, however, were made by the use of a balanced ration consisting of equal parts of corn meal and middlings fed in a dry lot as compared with the same ration with rape as a forage crop. It would seem to indicate that in the corn belt where corn is the chief grain fed to fattening hogs, that the use of dairy by-products, such as skim-milk would be much more efficient than the use of corn alone with rape.

Feeding "straight corn" in a dry lot results in the production of approximately 10 pounds of pork from each bushel of corn, in comparison with 13 pounds from each bushel fed on rape, which would indicate that the use of rape as a pasture for fattening hogs will increase the yield of pork from a bushel of corn approximately three pounds. Where corn is fed in connection with skim-milk, the result will be an increase of approximately 10 pounds of pork from every bushel of corn fed, as compared with "straight corn" fed in a dry lot.

*Henry's "Feeds and Feeding," page 579.

PART II

A COMPARISON OF SKIM-MILK, LINSEED MEAL, TANKAGE, SOY BEAN MEAL AND MIDLINGS AS SUPPLEMENTS TO CORN MEAL FOR FATTENING HOGS

There is a general demand among farmers and feeders for information as to the value of skim-milk when compared with concentrated nitrogenous feeds, such as tankage, middlings, linseed meal and soy bean meal, which are generally used as supplements to corn for fattening hogs. In order to secure accurate information as to these feeds, it is necessary to conduct feeding trials in dry lots so that all conditions are under control.

Experiment III

In Part II a little different line of work from that in Part I is reported, as all of the hogs were fed in a dry lot without access to green feed in any form. The experiment was conducted during the months of April and May when the weather was almost ideal for fattening hogs, being comparatively cool and dry. The hogs used in this test were cross-bred Berkshire-Yorkshire and Poland-China-Yorkshire, bred and raised on the University farm. They were farrowed during the fall of 1906 and were carried through the winter on a light grain ration which was conducive to growth rather than fattening, hence were in such condition as to insure rapid gains. They were divided into five lots as nearly equal as possible in age, weight, condition, breeding and quality, and placed in a dry lot with access to individual A-shaped hog houses for shelter which served to accommodate them without crowding. The feed was given them in the form of a thick slop in round-bottomed, galvanized iron troughs, six inches deep, 12 inches wide, and six feet long, in each lot.

The proportion of supplement to corn meal was such as to make the nutritive ratio of the feeds given each lot practically the same. In order to accomplish this, Lot 1 was fed on a ration of eight parts corn meal to one part linseed meal; Lot 2, 7 parts corn meal to 1 part soy bean meal; Lot 3, 15 parts corn meal to 1 part tankage; Lot 4, 1 part corn meal to 1 part middlings; Lot 5, 1 part corn meal to 1.5 parts skim-milk by weight. The nutritive ratio was 1:7.4 as nearly as could be determined without conducting digestion trials.

TABLE III.—Showing Weights, Gains, Feed and Dry Matter Consumed Daily per Head and per Pound Gain in Comparing Linseed Meal, Soy Bean Meal, Tankage, Middlings and Skim-milk as Supplements to Corn Meal in a Dry Lot.

April 10-June 9, 1909. (60 days)

	Lot 1 (5 pigs) Corn meal, 8 Linseed meal, 1	Lot 2 (5 pigs) Corn meal, 7 Soy bean meal, 1	Lot 3 (5 pigs) Corn meal, 15 Tankage, 1	Lot 4 (5 pigs) Corn meal, 1 Middlings, 1	Lot 5 (5 pigs) Corn meal, 1 Skim-milk, 15
Av. wt. per head at beginning	112.4 lbs.	113.8 lbs.	116.6 lbs.	115.4 lbs.	113.6 lbs.
Av. wt. per head at close	217.4 "	223.2 "	226.8 "	234 "	235.2 "
Av. gain per head (60 days)	105 "	109.4 "	110.2 "	118.6 "	121.6 "
Av. daily gain per head	1.75 "	1.82 "	1.83 "	1.97 "	2.02 "
Total feed	1973.5 "	2007 "	2114.5 "	2145 "	1806 "
Total amount of corn meal used	1753.8 "	1746.2 "	1982.4 "	1072.5 "	1806 "
Av. daily feed per head	6.57 "	6.69 "	7.04 "	7.15 "	6.02 "
Av. feed per pound gain	3.75 "	3.67 "	3.83 "	3.61 "	9.03 "
Av. daily feed per cwt.	3.98 "	4.02 "	4.10 "	4.08 "	2.97 "
Av. daily dry matter fed per cwt.	3.44 "	3.49 "	3.54 "	3.61 "	4.45 "
Av. dry matter per pound gain	3.25 "	3.19 "	3.31 "	3.19 "	3.45 "
					5.17 "
					3.46 "
					2.97 "

Table III shows that the rate of gain in Lot 1, 1.75 pounds per head daily, was the smallest secured, followed in regular order by Lot 2, 1.82 pounds; Lot 3, 1.83 pounds; Lot 4, 1.97 pounds; and Lot 5, 2.02 pounds. Like the results reported in the preceding part of this bulletin, the hogs fed on corn and skim-milk made a more rapid gain than any other lot. The total amount of feed varied with the gains, which is an important consideration, as usually hogs that are given feeds which stimulate appetite, make a much more rapid gain than those fed smaller quantities of the same kind of feed or given feeds that are less palatable.

One fact which will prove especially interesting to corn growers, is that in Lot 3 where corn meal and tankage were fed, there was a greater amount of corn used in proportion to other feeds than in any other, and in Lot 4 where corn meal and middlings were used, the proportion of corn was smallest. In Lot 5 where corn meal and skim-milk were used, the smallest amount of grain, 2.97 pounds corn meal, and 4.45 pounds skim-milk, was required to produce a pound of pork. This was followed by Lot 4 which required 3.61 pounds of the grain mixture; Lot 2, 3.67 pounds; Lot 1, 3.75 pounds, and Lot 3, 3.83 pounds in the order named. The dry matter consumed in proportion to live weight, with the exception of Lot 5 was proportionate to the rate of gain. Where dry feed was used exclusively, the lot fed on corn meal and middlings consumed the greatest amount of dry matter and made the greatest daily gain. Those fed on corn meal and linseed meal consumed the smallest amount of dry matter and made the smallest gain. The small amount of dry matter consumed in the skim-milk lot is undoubtedly due to the character of the feed, as skim-milk contains a very small proportion of dry matter to digestible nutrients. It will be seen that the smallest amount of dry matter necessary to produce a pound of pork was in the lot fed on corn meal and skim-milk, and the greatest amount was in the lot fed corn meal and tankage.

TABLE IV.—Showing Initial Value of Hogs, Value of Feeds, Cost of Gains, Profit per Lot and Value of Skim-milk as Compared with Linseed Meal, Soy Bean Meal, Tankage and Middlings as Supplements to Corn Meal in a Dry Lot.

	Lot 1 (5 pigs) Corn meal, 8 Linseed meal, 1	Lot 2 (5 pigs) Corn meal, 7 Soy bean meal, 1	Lot 3 (5 pigs) Corn meal, 15 Tankage, 1	Lot 4 (5 pigs) Corn meal, 1 Middlings, 1	Lot 5 (5 pigs) Corn meal, 1 Skim-milk, 15
Initial value of hogs @ \$5.25 per cwt.....	\$29.50	\$29.87	\$30.60	\$30.29	\$29.82
Total value of feed*.....	19.07	19.56	20.48	23.05	21.67
Total cash outlay for supplement.....	3.28		2.64	13.40	
Total cost of hogs and feed.....	48.57	49.43	51.08	53.34	51.49
Cost of gains per cwt.....	3.63	3.57	3.71	3.88	3.56
Selling value of hogs @ ..\$5.25 per cwt.....	57.06	58.59	60.53	61.42	61.74
Profit per lot.....	8.49	9.16	9.45	8.08	10.25
Difference in profit in favor of skim-milk lot.....	1.76	1.09	.80	2.17	
Value of skim-milk per cwt. as compared with other feeds*..	26 5c.	24c.	22 9c.	28c.	

*—Based upon the following prices:

Corn meal.....	\$18.00 per ton.
Linseed meal.....	\$30.00 "
Soy bean meal.....	\$30.00 "
Tankage.....	\$40.00 "
Middlings.....	\$35.00 "
Skim-milk.....	30c. per cwt.

Table IV shows the initial value of the hogs, feeds, cost of gains, profits and comparative value of skim-milk with other feeds. The initial value of all the hogs used in this experiment was \$5.25 per hundred at the beginning of the fattening process. As the weights were practically equal, the initial value of the hogs in each lot was very similar, varying from \$29.50 to \$30.60 on a lot of five pigs. The total value of feeds consumed varied from \$19.07 in the lot fed corn meal and linseed meal to \$23.05 in the lot fed corn meal and middlings. The lot given corn meal and soy bean meal and that given corn meal and skim-milk were fed exclusively on feeds which can be produced on the farm; hence in feeding hogs in this manner there would be no need of a cash outlay for supplements. In the other three lots it required \$3.28 for linseed meal, \$2.64 for tankage and \$13.40 for middlings in sufficient quantities to make the rations similar in the proportion to digestible nutrients.

The cost of gains per hundred, based upon the prices indicated in the table, were smaller in the corn meal and skim-milk lot than in any other in the test, followed very closely by the corn meal and soy bean lot, both of which are home grown rations. The cost of gains was greatest in the lot fed on corn meal and middlings. There was practically no difference in value per pound from a commercial standpoint of the five lots of hogs at the time the experiment closed, the lot fed on corn meal and tankage being, if anything, worth just a little more than any other lot, due to their higher finish, but the difference was not great enough to affect their market price as compared with the other lots. For this reason the selling value of the hogs is given at \$5.25 per hundred in each lot, which is the same as the initial value when the experiment started. In this way the profits per lot depended wholly upon the additional gains made and as the feeds were charged at the prevailing market prices at the time the experiment was conducted, the results would be applicable to similar conditions at any time.

Table IV also shows that the greatest profit per lot was secured from feeding corn meal and skim-milk; the smallest profit from corn meal and middlings. The lot ranking second in profit was that fed on corn meal and tankage, followed by corn meal and soy bean meal, and corn meal and linseed meal in the order named. The total difference in profit in favor of the use of skim-milk varied from 80 cents in the corn meal and tankage lot to \$2.17 in the corn meal and middlings lot. Attributing the additional profits in the skim-milk lot to be due to the use of skim-milk it was found that the value of skim-milk as compared with other feeds was as follows: 26.5 cents per hundred as compared with linseed meal at \$1.50 per

hundred; 24 cents per hundred as compared with soy bean meal at \$1.50 per hundred; 22.9 cents as compared with tankage at \$2.00 per hundred and 28 cents as compared with middlings at \$1.25 per hundred.

The results of this test would seem to indicate that a mixture of corn meal with one and one half its weight of skim-milk is a most efficient ration for fattening hogs that have been grown to a weight of 100 to 125 pounds and fed to a marketable condition at 235 pounds, and that it will not only produce very rapid gains, but will also produce more economical gains than any commercial feed tested. It should be remembered in studying these results, that the showing in every lot was excellent, giving a large profit in proportion to the amount of feed used and that a ration of corn meal and middlings, which made the poorest showing in this test, is very useful and can be fed with profit. This test seems to bring out very forcibly the value of utilizing dairy by-products on the farm for the production of pork. It also shows conclusively that a ration made up of corn meal and soy bean meal, both of which can be grown on a large number of farms in Indiana, will insure rapid gains and comparatively large profits. Where it is necessary to buy a commercial concentrate to use in connection with corn, the advantage that tankage possesses over the other feed used in this test, is that it contains a higher percentage of protein, hence, a smaller amount of it than of any other feed used, was necessary; that there was a small cash outlay for an equal financial return, the hogs attained a higher finish and the profit from its use at \$2.00 per hundred in connection with corn meal at \$18.00 per ton was almost as great as that from using skim-milk valued at 20 cents per hundred.

PART III

A COMPARISON OF SHELLED CORN, SHELLED CORN AND TANKAGE, AND SHELLED CORN AND BUTTER MILK FOR FATTENING HOGS

On many farms in the state, it is very inconvenient to use ground feed and slop for feeding hogs and at the same time there is a desire to utilize some of the various nitrogenous supplements in connection with corn in order that cheaper and more rapid gains may be secured from fattening hogs. With this condition in view, the experiment reported in Part III was conducted. Instead of grinding corn and mixing tankage with it as in the preceding work, shelled corn was fed on the ground and the supplements fed separately without mixing with other feeds.

Experiment IV

Three lots of 10 hogs each were used. Lot 1 was fed shelled corn without supplement, Lot 2 shelled corn with tankage, and Lot 3 shelled corn with butter milk. Shelled corn was fed according to appetite, in all lots; tankage was fed to Lot 2 at the rate of .63 pound per head daily throughout the test, and butter milk to Lot 3 at the rate of 15.96 pounds or approximately two gallons per head daily.

The hogs used in this experiment were of indiscriminate breeding, having been used to follow cattle in the cattle feeding experiments throughout the preceding winter. At the time the cattle feeding experiment closed they had made exceptionally good growth, but were not finished to a degree which would insure a profitable price upon the market; for this reason they were fed one month in the experimental lots as indicated in this bulletin.

They averaged in weight at the beginning of the test from 200 to 206 pounds in the various lots, and gained 42 pounds per head in Lot 1, 52 pounds in Lot 2, and 66 pounds in Lot 3 as shown in Table V. The average daily gain in all lots was above that usually secured, as the hogs were in a most desirable condition for making rapid gains, having attained a sufficient size to insure a maximum consumption of feed in proportion to their weight, and were not fat enough to interfere with rapid and profitable gains during the finishing period. Lot 1, which was fed on shelled corn, made an average daily gain of 1.4 pounds per head, requiring 4.43 pounds of grain for each pound increase in live weight. Lot 2 made an average daily gain of 1.73 pounds requiring 3.29 pounds shelled corn and

TABLE V.—Showing Weights, Gains, Feed Consumed and Cost of Gain in Feeding Shelled Corn, Shelled Corn and Butter Milk and Shelled Corn and Tankage in Finishing Hogs.

June 9—July 8, 1908. (30 days).

Ration	Lot 1 (10 hogs) Shelled corn	Lot 2 (10 hogs) Shelled corn Tankage	Lot 3 (10 hogs) Shelled corn Butter milk
Average weight at beginning.	201	200	206
Average weight at close.	243	252	272
Total gain	420	520	660
Average gain per head.	42	52	66
Average daily gain per head.	1.40	1.73	2.20
Total feed consumed.	1862	1712	1630
Daily feed per head.	6.20	190	4790
Feed per pound gain.	4.43	5.70	5.46
Gain per bushel corn fed.	12.6	.63	15.96
Cost of gain per cwt. with corn @ 40c. per bushel.	\$3.16	3.29	2.47
@ 50c. per bushel.	\$3.95	.36	7.25
@ 60c. per bushel.	\$4.74	17	22.6
@ 70c. per bushel.	\$5.53		
		\$3.06	\$3.21
		\$3.64	\$3.65
		\$4.25	\$4.09
		\$4.84	\$4.53

*—Based upon the following prices:
 Tankage.....\$2.00 per cwt.
 Butter milk.....30c.

.36 pound tankage for each pound of increase in live weight. In Lot 3 the daily gain was 2.20 pounds, requiring 2.47 pounds shelled corn and 7.25 pounds butter milk for each pound of gain. The amount of gain produced for each bushel of corn fed in the various lots was as follows. Lot 1, 12.6 pounds; Lot 2, 17 pounds and Lot 3, 22.6 pounds.

In order to make the results apply not only to market conditions at the time of the experiment, but also to the various prices of corn during recent years, the cost of gains has been figured on the basis of corn at 40, 50, 60 and 70 cents per bushel. In all instances the tankage is estimated at \$2.00 and the butter milk at 20 cents per hundred. The table shows that with corn at 40 cents per bushel there was but very little difference in the cost of gains in any of the various lots. The cheapest gain was made in Lot 2, fed shelled corn and tankage and the most expensive gain in Lot 3, fed shelled corn and butter milk. With corn at 50 cents per bushel, the most expensive gains were in Lot 1, fed on shelled corn without any supplement. There was but very little difference between Lot 2, where tankage was used as a supplement at \$2.00 per hundred and butter milk at 20 cents per hundred. With corn at 60 and 70 cents per bushel, the cheapest gains in both instances were made in Lot 3; followed by Lot 2 and Lot 1 in the order named. This would indicate that with relatively cheap corn (40 cents per bushel) and butter milk at 20 cents per hundred, there would be no decrease in the cost of gain from the use of butter milk. However, owing to the more rapid gains made by the use of butter milk in connection with corn, the selling price of the hogs would have been enough greater to have justified the use of this feed even at the prices stated. As the price of corn advances, the use of supplements is very much more advisable showing a difference in the cost of gains with corn at 70 cents per bushel of \$1.00 per hundred by the use of butter milk in this test. The results show that the use of 36 pounds of tankage resulted in a saving of 114 pounds of shelled corn, while the use of 725 pounds of butter milk resulted in a saving of 196 pounds of shelled corn.

It should be remembered in studying the table presented in this connection that these results were secured with hogs that had been thoroughly developed in growth and were simply fed for fattening purposes. The results would have been even more striking had the hogs been grown and fattened at the same time, as the deficiencies of shelled corn would have been greater with growing hogs than in fattening them. The results indicate very clearly, however, that with corn at 50 cents or more per bushel, a feeder is justified in using either a commercial supplement or a dairy by-product for fattening as well as for production of growth.

PART IV

A COMPARISON OF SKIM-MILK, LINSEED MEAL AND SOY BEAN MEAL AS SUPPLEMENTS TO CORN MEAL FOR FATTENING HOGS

The results presented in Part IV of this bulletin were secured under conditions very similar to those reported in Part II except that the season of the year during which the feeding was conducted was very unfavorable for the rapid production of pork on account of the extremely hot weather.

Experiment V

The hogs used in this test were cross-bred Poland-China-Yorkshire and Berkshire-Yorkshire with one pure bred Berkshire and one pure bred Poland-China in each lot. They were raised on the University farm and given a liberal allowance of grain from the time of farrowing until started in the experiment. They averaged from 105.5 pounds to 106 pounds in the various lots at the beginning of the experiment. Lot 1 was fed one part corn meal to 1.5 parts skim-milk mixed in the form of slop. Lot 2 was fed a mixture of 8 parts corn meal and 1 part linseed meal, and Lot 3, a mixture of 8 parts corn meal and 1 part soy bean meal. The grain was fed to Lots 2 and 3 in the form of a thick slop.

Table VI shows that Lot 1 fed on corn meal and skim-milk made an average daily gain of 1.76 pounds per head throughout the period of 60 days during the middle of the summer. Lot 2, fed corn meal and linseed meal made .98 pound daily and Lot 3, fed corn meal and soy bean meal .9 pound. It will be noticed that the gains secured in this experiment were very much smaller than those secured in the experiment reported in Part II, when the same feeds were used. This was due to the previous treatment and condition of the hogs and the season of the year when the experiment was conducted. The hogs used in the previous experiment, had been fed a maintenance ration, while those used in this experiment were crowded from birth to market. This shows the definite bearing that the condition of the hogs when the feeding period begins, has upon the rate and cost of gain. As in previous experiments * a ration composed of corn meal and soy bean meal is not as palatable as one composed of corn meal and linseed meal or corn meal and skim-milk. The total amount of feed consumed in this experiment

*Bulletins No. 108 and No. 126.

TABLE VI.—Showing Weights, Gains, Feed Consumed, Cost of Gains and Profit Resulting from the Use of Skim-milk, Linseed Meal and Soy Bean Meal as Supplements to Corn Meal for Fattening Hogs.

June 19—Aug. 18, 1908. (60 days).

Ration	Lot 1 (6 pigs) Corn meal, 1 Skim-milk, 1.5			Lot 2 (6 pigs) Corn meal, 8 Linseed meal, 1			Lot 3 (6 pigs) Corn meal, 8 Soy bean meal, 1		
Average weight at beginning		105.5 lbs.			106 lbs.			105.6 lbs.	
Average weight at close.....		211.6 "			165 "			160 "	
Average gain per head.....		106.1 "			59 "			54.3 "	
Average daily gain per head		1.76 "			.98 "			.90 "	
Total feed consumed.....		1702 "	corn meal		1466.7 "	corn meal		1306.7 "	corn meal
		2553 "	skim-milk		183.3 "	linseed meal		163.3 "	soy bean meal
Average daily feed per head		4.72 "	corn meal		4.07 "	corn meal		3.63 "	corn meal
		7.09 "	skim-milk		.50 "	linseed meal		.47 "	soy bean meal
Average feed per pound gain		2.67 "	corn meal		4.14 "	corn meal		4 "	corn meal
		4 "	skim-milk		.51 "	linseed meal		.50 "	soy bean meal
Initial value of hogs @ \$5.60									
per cwt.		\$35.44			\$35.61			\$ 35.50	
Total value of feed.....		29.26			\$22.54			\$ 21.08	
Costs of gains per cwt.		\$ 4.60			\$ 6.36			\$ 6.16	
Selling value of hogs @ \$6.80									
per cwt.		\$86.36			\$67.32			\$ 65.28	
Profit per lot.....		\$21.66			\$ 9.17			\$ 9.70	
Value of skim-milk per cwt..					73c.			71c.	

was 1702 pounds corn meal and 2553 pounds skim-milk in Lot 1, 1650 pounds mixture of corn meal and linseed meal and 1470 pounds mixture of corn meal and soy bean meal. The rate of gain varies very largely, not only in this experiment, but in previous experiments reported with the consumption of feed per head and per hundred pounds live weight. The amount of feed required to produce a pound of pork in this experiment was 2.67 pounds corn meal and 4 pounds skim-milk; 4.14 pounds corn meal and .51 pound linseed meal; 4 pounds corn meal and .5 pound soy bean meal, showing that corn meal and skim-milk is the most efficient ration used in this test, not only from the standpoint of the rate of gain, but also from the feed required to produce a pound of gain and from the ultimate finish of the hogs. A mixture composed of corn meal and soy bean meal was more efficient than one of corn meal and linseed meal as regards the cost of gain, though the rate of gain was greater where linseed meal was used as a supplement.

The financial statement in regard to the hogs used in this test is made upon the basis of prices prevailing at that time, which were abnormal. In this first place the price of hogs in general increased \$1.20 per hundred pounds between the beginning and close of the experiment. The price of corn was higher than at any previous time in the last 20 years, being at that time worth on the local market an average of 70 cents per bushel. The prices of feeds used were 70 cents per bushel for corn, with an addition of 10 cents per hundred for grinding; 25 cents per hundred for skim-milk and \$30.00 per ton for both linseed meal and soy bean meal. With these prices it cost \$4.60 per hundred pounds gain in Lot 1; \$6.36 in Lot 2 and \$6.16 in Lot 3. The profit on six hogs in Lot 1 was \$21.66, in Lot 2, \$9.17 and in Lot 3, \$9.70, showing that skim-milk should be used extensively as a supplement to corn for fattening hogs whenever it can be secured; that soy bean meal may not only replace an equal amount of linseed meal in the ration, but will result in a cheaper gain and greater profit. It should be remembered in studying the results of this experiment, that it was conducted under normal conditions as far as the feeding and the hogs were concerned, but under abnormal conditions from the market standpoint. For this reason the profits are much greater than they would otherwise be and the showing made by the use of a supplement is very much more favorable than with corn at normal prices.

GENERAL CONCLUSIONS

1. Skim-milk has proven to be the most efficient supplement to shelled corn or corn meal, used in the experimental feed lots at the Station for the past five years in fattening hogs.

2. Soy bean meal has proven to be equally as efficient as linseed meal in all of the tests conducted at the Station.

3. Tankage has been the most efficient commercial feed used as a supplement to corn in fattening hogs under market conditions prevailing during the past five years.

4. The previous treatment and the condition of the hogs when the fattening process begins, have as much influence on the subsequent gains as does the kind of feed used.

5. In every experiment conducted at the Station during the past five years there has been an increase in the rate of gain, a decrease in the cost of gain, a higher finish and a greater profit, resulting from the use of a supplement in connection with shelled corn or corn meal, as compared with the same feeds without supplements in fattening hogs.

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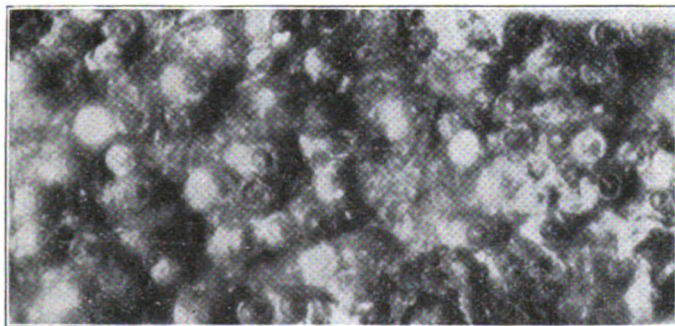
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THE SAN JOSE SCALE SOME SPRAYS FOR ITS CONTROL

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THE SAN JOSE SCALE

SOME SPRAYS FOR ITS CONTROL

C. G. WOODBURY

That the San Jose scale is extremely prevalent in nearly every part of Indiana is a matter of common knowledge. The willingness to learn to recognize it and to apply the known methods for controlling it, seems as yet to be confined to a relatively small proportion of our fruit growers. The demand for information along this line, however, is noticeably increasing from year to year, and each season finds more fruit growers and farmers protecting their trees from destruction by this pest.

It is the purpose of this bulletin to report upon the results of tests carried on for the past three years with several commercial preparations for the control of San Jose scale, which are offered for sale in the state. With this report is included a brief popular description of the scale and its work so that it can be recognized by any one who will carefully look at his trees.

DESCRIPTION OF THE SAN JOSE SCALE

The San Jose scale is a minute, oval, yellow insect, which lives by sucking the juice of the plant. The insect body is covered by a convex disk, the "scale", which is dark gray to black in color, and which effectually protects the soft-bodied creatures beneath from notice, and also from any but the most powerful and penetrating contact insecticides. The winter is passed in the half grown condition shown in Fig. 2. It is at this stage of development that the "ring-and-nipple" marking, so characteristic of the scale is most plainly to be seen. The adults and the very young do not survive the winter. When the weather becomes warm in spring the survivors from the preceding season complete their growth and begin breeding. The young are born alive and for the first day or two of their lives are active and crawl about, apparently searching for a suitable place to settle and begin feeding. At this stage the young are barely visible to the naked eye and appear, as some one has aptly said, like tiny, animated specks of corn meal. It is during this first period of their existence, too, that the scales are transported to new

trees and to neighboring orchards, by crawling on to birds' feet. Larger insects and blowing leaves also probably serve in some measure as disseminating agents.

Within a day or two after birth, minute, naked scales settle on the smooth bark or even on the leaves and fruit of some species and begin to feed by sucking the plant juice through their tubular mouth parts. In a short time the scaly covering begins to appear. At first this is pure white but gradually turns dark. After locating and beginning to feed, the females lose their legs and eyes and become ap-

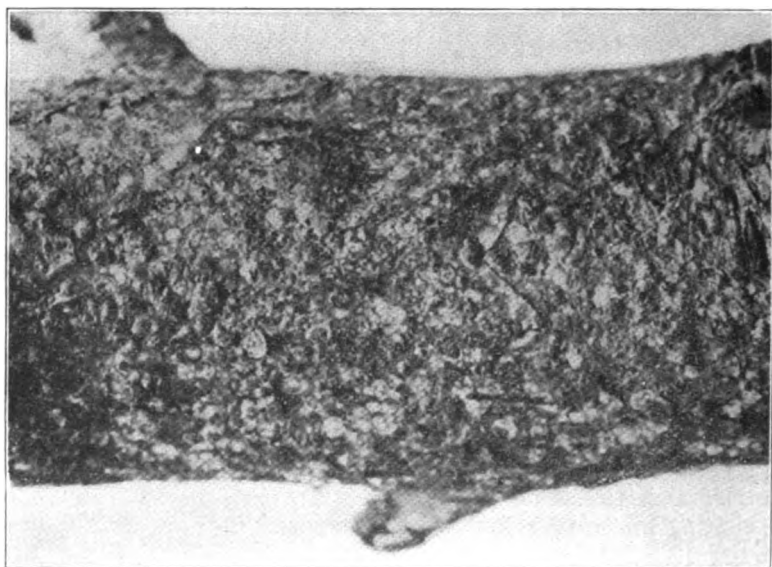


Photo by C. G. Woodbury

Fig. 1. Badly infested branch of peach. Scale only slightly enlarged

parently little more than oval sacks, sucking the juice of the host plant. The males undergo their transformation beneath the scale somewhat like other insects and emerge as minute delicate two winged creatures.

On a thoroughly infested branch during the breeding season, all the above stages may be seen, except the adult males. The tiny "crawlers", the white "sets", the half grown scales of both sexes and the adult female scale, distinguished by its larger size and smoother and flatter appearance, may all be found. A badly infested branch appears on examination as if covered with a deposit of fine

coal ashes. The scurfy mass composed of great numbers of scales, may be pushed away by the thumb nail, and the bark exposed.

If rubbed, an oily streak is left on the branch by the crushed scales. The individuals are very small, the writer having counted as many as 500 per square inch in severe infestations. A small hand lens is very useful, as with it the scale may easily be detected. Roughly speaking the ring-and-nipple marking shown in the enlarged photograph, Fig. 2, may be taken as proving the identity of the San Jose scale. In order to see them, a hand lens is necessary,

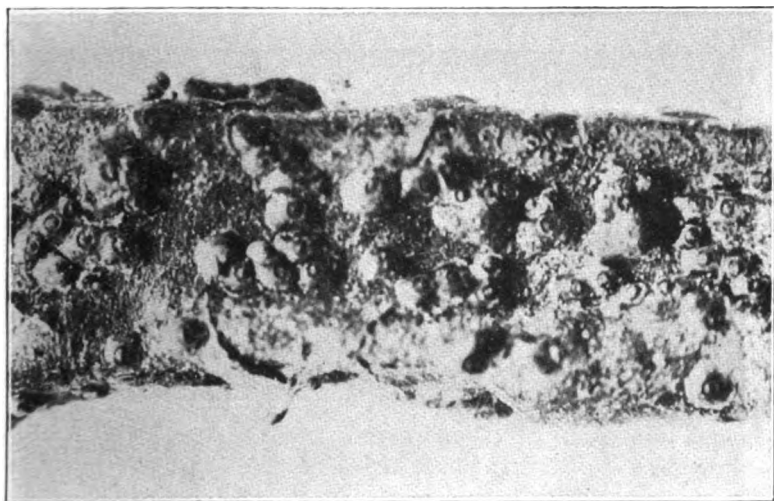


Photo by Demaree and Stevens

Fig. 2. San Jose scale as seen through a hand lens, showing characteristic markings

which magnifies several diameters. There are some exceptions to this, but they are not likely to come under the eyes of the fruit grower.

Where the infestation is slight, bright red discolorations may be caused on the bark of the apple and pear, and sometimes on the peach. This red spotting by the scale is often conspicuous on the fruit of the pear and apple, as well as on the bark. Other species of scale may cause the red marking but a prompt investigation should follow its discovery and the identity of the scale be determined. The inner bark also is often stained dark red by the scale.

With these descriptive facts in mind and the illustrations at hand, it is hoped that any fruit grower will be able to identify the

scale if present on his trees. The Department of Horticulture is glad to receive specimens at any time, about which there is any doubt and will notify the senders promptly, whether or not the San Jose scale is present on specimens received.

HOW TO CONTROL THE SCALE

The San Jose scale, notwithstanding the fact that it is possibly the most destructive pest in Indiana orchards today, and is causing thousands of dollars annual loss, can be controlled without great expense. That this is true is being proved by hundreds of orchard-



Photo by C. G. Woodbury

Fig. 3. San Jose scale on pear. The dark areas are the red discolorations surrounding the scales on the skin of the fruit

ists every year. The danger lies in the rapid, inconspicuous and deadly spread of the scale and the fact that it may cause the death of half of the orchard before the owner realizes the trouble.

Every owner of fruit trees should learn to recognize San Jose scale. Remedial measures should be taken immediately upon discovery. If the owner of infested trees is indifferent and is unwilling to destroy the scale promptly, he should destroy the trees in

order that they may not furnish breeding grounds and spread the infestation to neighboring trees, during the few years that elapse between infestation by the scale and death from its attack.

The scale is controlled by spraying. This spraying must be done while the trees are dormant, after the leaves are off in fall or before they come out in spring. Anything strong enough to eradicate scale is too strong for the trees during the growing season.

This spraying may be done with any of the materials discussed farther on. It has been the writer's experience that the lime-sulfur wash, either home-made or commercial, is the most satisfactory for most scale spraying. The reasons for this appear later. The spraying for scale must be done with the greatest possible thoroughness. This is absolutely essential to success. If pruning has been neglected, it should precede spraying for scale, and should be done pretty freely. There are many scale infested orchards in Indiana where thorough spraying is practically impossible on account of the over-crowded tops of trees.

If the orchard is badly infested and has been neglected, it is a good plan to make two applications the first season, one in the fall after the leaves are off, and another in spring before they appear. This is especially true if the owner is inexperienced in spraying operations. If only one spraying be given, let it be in spring.

REMEDIES

The practical orchard man will ask three questions of any remedy proposed for the scale. *Is it effective? Is it safe? Is it cheap?* There are several materials which are effective in killing San Jose scale, which on account of danger to the tree or high price, either cannot be recommended at all, or which can be recommended only in a very limited way and with many qualifications.

Following are brief discussions of several materials advertised or recommended for scale, the efficiency of which the Station has studied during the last three years. The information in regard to these materials has been condensed as much as possible, as little is to be gained by tabulation of counts of scales killed, made to determine the efficiency of a given spray. In the tests here reported, counting was only partially relied upon; the comparative condition of the sprayed trees and the unsprayed checks were held to be of greater value. The spraying was done during 1907, 1908 and 1909, in March of each year, with the exception of some tests with kerosene.

Examinations were made of sprayed and check trees at about the beginning of the breeding season in early June and again in the fall. The writer personally made nearly all the tests and examina-

tions here reported and every precaution was taken to insure absolute thoroughness of application. The spraying materials in the tests were always used to the point of wastefulness and every part of the tree literally soaked. The trees used were for the most part badly infested apples from five to 10 years old, although one six year old peach orchard and a few plums were included in a part of the tests. Credit is due to Mr. B. R. Ryall, Assistant Horticulturist, for making examinations in 1909 of trees sprayed with several of the mix-

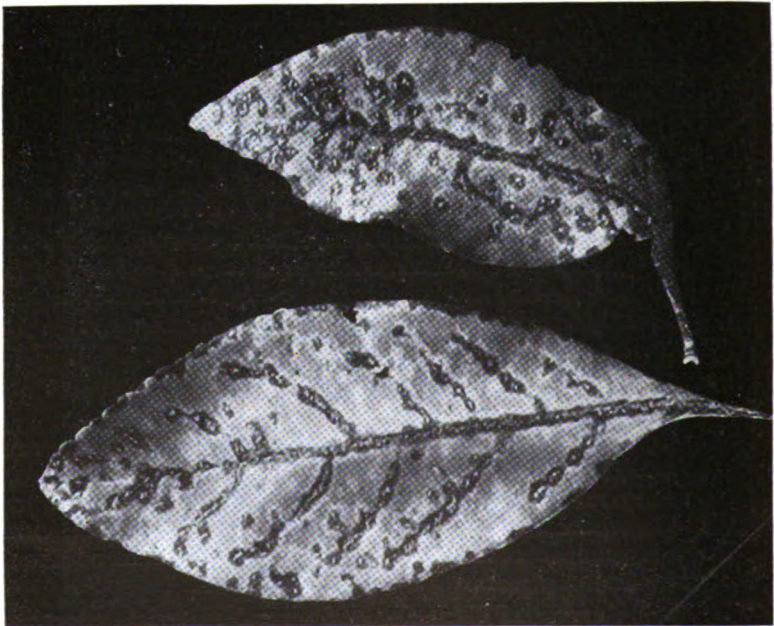


Photo by C. G. Woodbury

Fig. 4. Leaves of Japan quince badly infested with San Jose scale, showing discolorations

tures, and to Mr. U. C. Allen, a graduate of the 1909 class of Purdue University, who did part of the spraying under the direction of the writer. Acknowledgment is also made to Mr. E. J. Walker & Son, Sheridan, and Mr. N. T. Jenks, LaPorte, for their uniform courtesy and valued assistance in carrying out the work in their respective orchards.

ARSENATED PETROLEUM EMULSION.—(Hammond's Slug Shot Works, Fishkill-on-Hudson, N. Y.) Used on Ben Davis apple; diluted first with equal volume of hot water, stirred and mixed

thoroughly. When sufficiently thin, cold water was added until the recommended dilution of 1-100 was secured. The mixture was not stable and soon separated. Trees were benefited very little. Scale was almost as plentiful as on unsprayed checks at time of first examination early in June, 15 to 25 live scales per square inch being found on sprayed trees.

CRUDE OIL.—This material was thoroughly effective in killing scale. Some orchardists in this state have used crude oil with apparent success for several years. On the trees under observation, the oil had been used in its natural state as it came from a nearby oil well. The effectiveness appears to last several seasons, but the material is too dangerous to tree life to be recommended. Many trees have been injured or killed by it. Used by an experienced hand, at a high pressure, and with a nozzle having a very fine cap, on a day when evaporation is rapid, it may not injure the trees if the nozzle is kept moving rapidly and the material not allowed to accumulate. Badly infested Ben Davis apple and Keiffer pear trees, sprayed in this way in Mr. E. J. Walker's orchard were freed from scale, apparently not injured and did not become reinfested from neighboring unsprayed trees for three or four years. The Station feels, however, that the risks are too great to make crude oil a safe spray to recommend.

HORICUM.—(Hammond's Slug Shot Works, Fishkill-on-Hudson, N. Y.) This is a preparation of lime, sulfur and other materials and was used at a dilution of 1-15, the recommended dilution being 1-16 to 1-20. The condition of the trees sprayed with this material was slightly better at the time of the June examination, than those sprayed with arsenated petroleum emulsion, but was not so good as trees sprayed with home-made lime-sulfur wash. By comparison with unsprayed checks, the application seemed to have done some good, but the action of Horicum in this test was not decided enough to warrant its recommendation as a spray material.

KEROSENE EMULSION.—(10 per cent. and 20 per cent.) This material was used late in the spring when the leaves were partly grown. It had been suggested that the scales could be killed with a much weaker insecticide at this time of year, than when the tree was dormant and when the scale might be considered to be more resistant.

The emulsion was made with "Tak-a-Nap" soap and cold water and was not difficult to secure. Water was added slowly to the soap and kerosene, while a vigorous agitation was kept up. The mixture at first thickens, but soon becomes thin enough as water is slowly added and stirred in, so that it can be diluted readily to spraying strength. For the 10 per cent. emulsion, one gallon of

kerosene was diluted with nine gallons of water; for the 20 per cent. emulsion one gallon of kerosene was used to four gallons of water.

The young apple leaves were not seriously injured by the 10 per cent. emulsion, but on comparing with the unsprayed checks, no effect on the scale was apparent.

The 20 per cent. emulsion killed the young foliage and the scale as well. Examination in the fall failed to reveal any live scale. The trees put out new leaves and by the end of the season appeared to be none the worse for the treatment. Spraying at this time is not to be recommended as a general practice, but it indicates what may be done in case of emergency. At the ordinary cost of kerosene, a 20 per cent. emulsion, which seems necessary to be effective, is rather too expensive to be used generally.

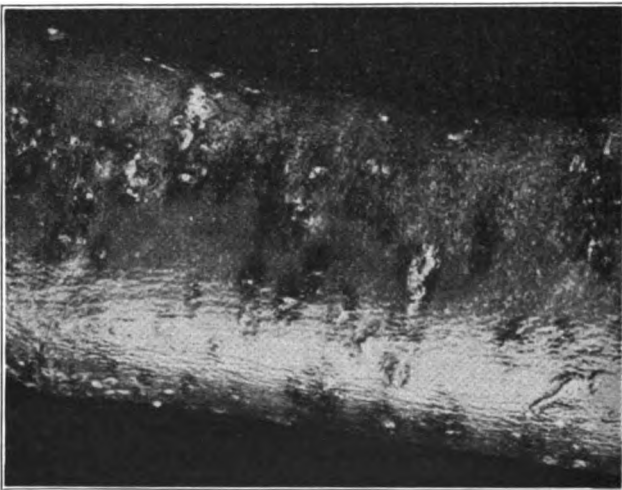


Photo by O. G. Woodbury

Fig. 5. Apple branch slightly infested with San Jose scale. The dark spots are the reddened areas caused by the scale. These spots often make slight infestations conspicuous on the smooth bark of apple and pear

KEROSENE-PURE.—The consideration mentioned with respect to the use of crude oil, holds with equal force regarding pure kerosene. It *may* be used successfully; it is effective, but it is too dangerous to be recommended.

LIME-SULFUR—HOME-MADE.—This material has been used by the writer for a number of years. It is cheap, safe and seems to be as efficient as any other material that can be recommended. It is made as follows:

By using at first a small quantity of water, mix 15 pounds flowers of sulfur into a thin paste. Slake 20 pounds of good, clean, stone lime in from five to 10 gallons of water. Some of the limes obtained in this state slake very slowly, and time is saved and better results obtained if hot water is used. If the lime is quick so that it boils violently in slaking, add the sulfur paste while the boiling is going on. This is in order to take advantage of some of the heat of the slaking lime to help cook the mixture. If the lime is slow and does not slake readily, give it plenty of time, so that it will not "drown" and refuse to slake satisfactorily. In dealing with this slow slaking lime, it is better to add the sulfur after the lime is slaked.

After adding the sulfur, dilute the mixture to about 25 gallons and boil for 45 minutes. Then dilute to 50 gallons and use while fresh. The material should not be allowed to stand and get cold, as part of it crystalizes and becomes of little value. This material as well as all others containing lime, should be strained into the spray tank through a fine mesh brass or copper strainer. Several suggestions in regard to outfits for cooking small quantities of the material will be found in our Circular No. 17, "The Farmers' Orchard."

LIME-SULFUR (GRASSELLI).—(Grasselli Chemical Co., Cleveland, Ohio.) Used at a dilution of 1-11. Of the 30 trees in the block sprayed, 26 were freed from the scale, two were slightly infested and on two, the scale was still quite plentiful at the time of the June examination. This material at the dilution used, seems to equal the home-made solution in effectiveness.

LIME-SULFUR (REX).—(Rex Co., Omaha, Neb.) This commercial brand was used on peach and apple in comparison with the home-made lime-sulfur. Both were effective and when the autumn examination was made in October, following March spraying of several hundred peach trees, only an occasional live scale could be found. Rex lime-sulfur was used at the recommended dilution of 1-11. The results on apple trees in 1908 were also satisfactory and practically alike for both Rex and home-made lime-sulfur. In 1907 neither material proved to be so thoroughly effective.

SULFUR COMPOUND.—W. H. Bogart, 29 Grove St., New York City.) Some difficulty was experienced in getting the material to mix readily with water. The material was used on 34 trees in the same block in which Target Brand lime-sulfur and Niagara lime-sulfur were used. A careful examination in June showed every tree in the block to be thoroughly infested with live scale. It was not apparent that the treatment had any effect.

TARGET BRAND.—(American Horticultural Distributing Co., Martinsburg, Va.) This is one of the miscible oil sprays, and in the writer's past experience has given varying results. In 1907 and 1908, it was impossible to secure an emulsion with the well water available for spraying purposes. The material refused to mix and dilute. Several other similar experiences came under the writer's observation during the season. At the solicitation of the manufacturers, further tests were made in 1909 with what was said to be



Photo by O. G. Woodbury

Fig. 6. A badly infested plum twig, with over 100 scales on the last half-inch. It is essential to spray thoroughly

an important preparation. This modified material mixed perfectly with the same well water that in previous years had failed to make an emulsion. The emulsion formed seemed to be very stable, not separating after 12 hours standing. The material was used at a dilution of 1-20.

The June examination of the sprayed block of 60 trees showed that the material had done good work, 55 being practically free from scale. On the remaining five, the infestation was slight and confined to crotches where possibly but little material could penetrate.

THRIP JUICE.—(Hammond's Slug Shot Works, Fishkill-on-Hudson, N. Y.) Used at recommended dilution of 1-1000. This material washes off very readily and in this test was not effective. At the June examination 10 to 25 live scales per square inch could be found, or about as many as on the unsprayed check trees.

VI. SPRAYING FLUID.—(Wm. Cooper & Nephews, Chicago, Ill.) This is an oil spray of great spreading power. It was used at the recommended dilution of 1-100 on plum trees. The spring examination showed that this heavy application had been inefficient. By autumn the trees in this plot had succumbed to the scale as had the unsprayed check trees. Others in the same block sprayed with lime-sulfur were in fairly good condition.

LIME-SULFUR VS. OIL SPRAYS

The relative merits of these two sorts of sprays for San Jose scale are subjects of frequent inquiry. Both have adherents and enemies. It may be said of the miscible oils as a class that they are easy and pleasant to work with, and not hard on tools, men or horses. They are readily prepared, requiring only to be mixed with water. As a class, it must be confessed that their efficiency is variable. Some are fairly reliable and effective at dilutions varying from 1-15 to 1-20. The fact that they spread and penetrate to a certain extent after reaching the tree, is often urged in their favor. Considerable injury has attended the use of oil sprays in the past, sometimes, no doubt, owing to careless handling and failure to follow directions precisely. In this state, considerable difficulty has been experienced with some miscible oils in getting them to emulsify and dilute with such water as was available.

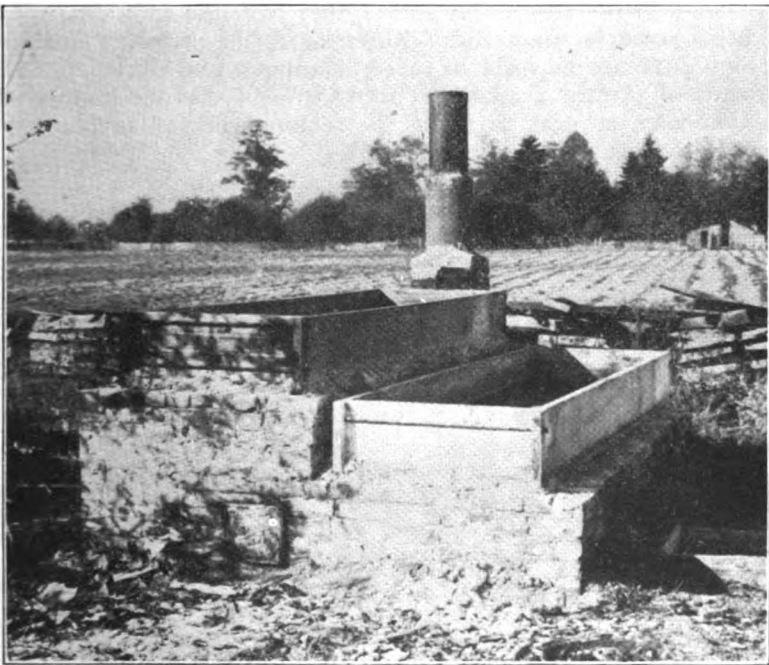


Photo by C. G. Woodbury

Fig. 7. An outfit for cooking large quantities of lime-sulfur. The spray tank is filled with an accessory pump or by dipping

The lime-sulfur sprays are not so pleasant to use as the oil sprays. They are corrosive in their effect on the skin, so that the hands and face of the operator need to be protected; they stain harness, etc. The home-made lime-sulfur wash is objected to by many on account of the difficulty of preparation and the fact that it requires boiling. It does not spread as the oil sprays do. The difficulty of preparation in the use of lime-sulfur does not apply to the commercial brands of prepared material which require only to be diluted with water to make them instantly ready for use. Some of these prepared lime-sulfur washes are proving to be as effective as the home-made material. They are at present rather more expensive than the home-made wash, but many owners of home orchards prefer to pay a slightly higher price and avoid the labor and bother of home preparations. As a class, the lime-sulfur sprays are cheaper than the miscible oils, there is no likelihood of injury following their use, and they are as uniformly effective as any cheap and safe material that can be recommended. Besides the scale killing ability of the lime-sulfur sprays, they have the additional value of being powerful fungicides. Referring to the necessary qualities of any spray for the scale, of safety, cheapness and efficiency, from the data at present available, it seems evident that the lime-sulfur sprays, come as near to filling the requirements as anything the orchardist can use.

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Agricultural Experiment Station

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RESULTS OF COOPERATIVE TESTS OF VARI- ETIES OF CORN, WHEAT, OATS, SOY BEANS AND COW PEAS, 1909

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HOG CHOLERA

R. A. CRAIG

H. H. MADAUS

INTRODUCTION

The Veterinary Department of the Experiment Station receives a large number of inquiries every year regarding the prevention and treatment of hog cholera, and this bulletin has been prepared for the purpose of informing farmers as to the investigation work of the past few years and methods of controlling this disease. Great interest has been shown in the Dorset-Niles hog cholera serum. For the present this serum cannot be produced in sufficient quantity to meet the demand. For this reason proper attention should be given other preventive measures than the serum-simultaneous method of vaccination, and an effort made to place hog cholera where it can be controlled by the use of a vaccine.

HOG CHOLERA

Hog cholera is an infectious disease of swine in which the lymphatic glands, intestines, lungs, kidneys and liver are commonly inflamed. The inflammation is hemorrhagic in character, the lymphatic glands are grayish red or red, and the discolorations present in other organs and tissues may vary in size from very small spots to large, irregular areas.

Hog cholera exists in all sections of the United States, but it is especially prevalent in the middle west. In this section of the country it may be considered of greater economic importance than any of the other animal diseases. In our own state the average yearly loss is about \$3,000,000. It is difficult to make an exact estimate of the loss to the swine industry from this disease, as the statistics giving the death rate in swine include all diseases, but it is fair to assume that the greater portion is due to hog cholera. We should also include with the loss resulting from the high fatality, that resulting from the marketing of young hogs in neighborhoods where the disease is prevalent. This frequently amounts to 50 per cent. of the herd's value.

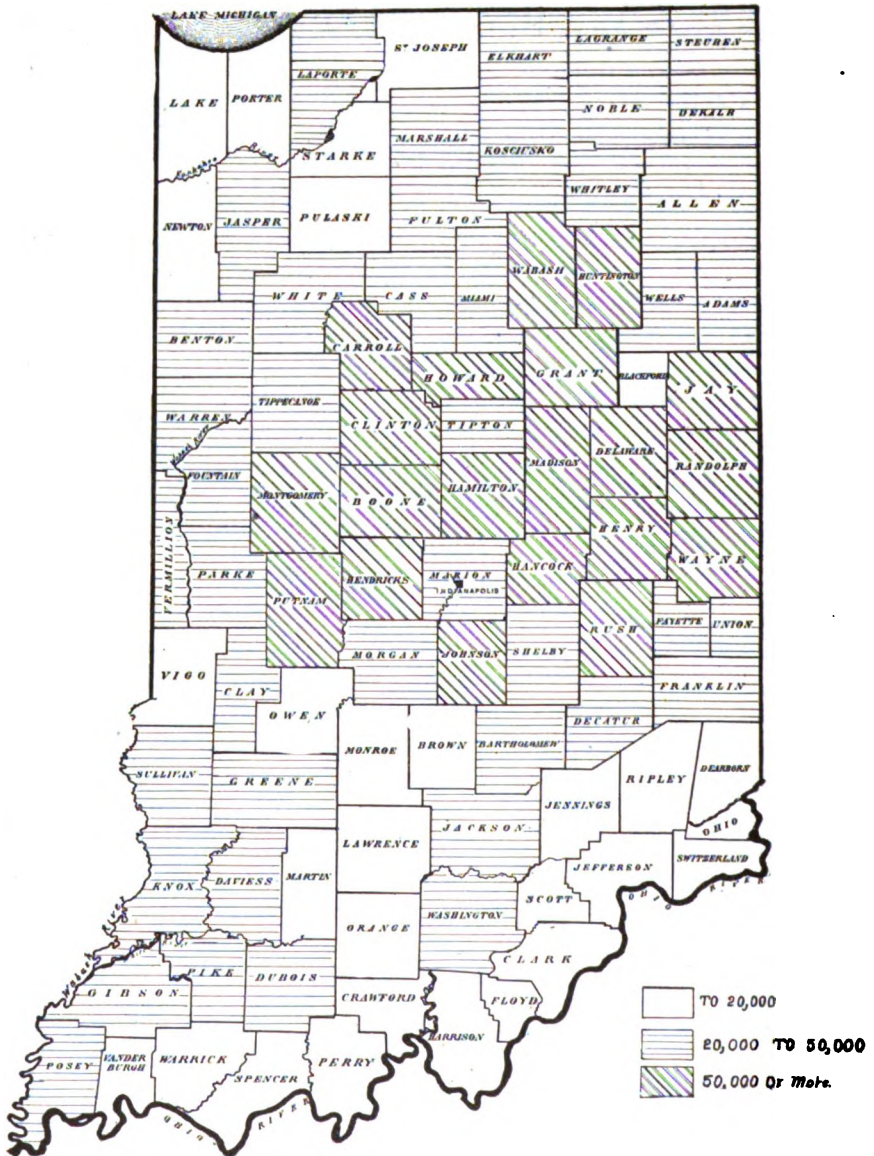


Fig. 1. Map showing hog population of state

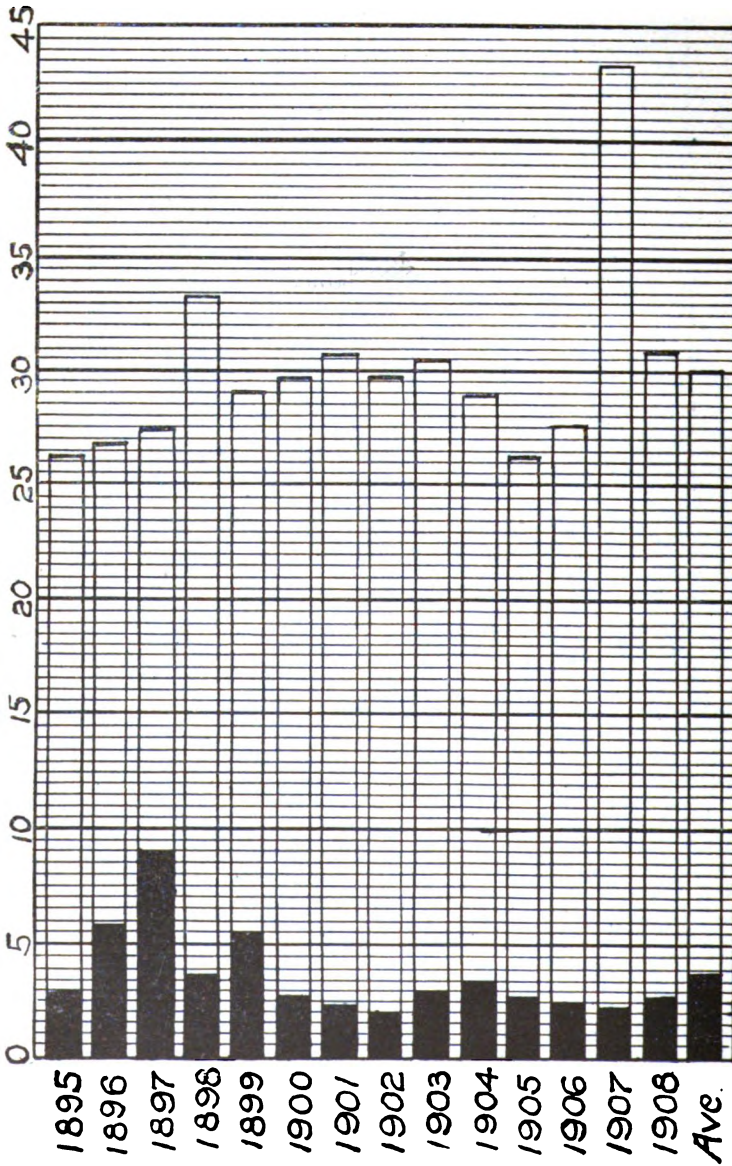


Fig. 3. Number of hogs raised and lost from disease in this state annually and the average for a period of fourteen years. Blackened portions show number lost. Each heavy cross line represents 50,000 and light lines 50,000 each.

THE AVERAGE YEARLY HOG CROP, DEATH RATE, AND PERCENTAGE
OF LOSS IN EACH COUNTY IN INDIANA FOR A PERIOD OF
TEN YEARS, FROM 1898-1908

County	Number of Hogs	Number of Deaths	Per cent. of Loss
Adams	42,509	3,709	8.7
Allen	48,294	3,955	8.1
Bartholomew	33,266	3,491	10.4
Benton	22,092	1,426	6.4
Blackford	19,770	2,762	13.9
Boone	83,303	6,533	7.8
Brown	6,430	276	4.3
Carroll	54,723	6,187	11.3
Cass	47,539	5,250	11.0
Clark	14,900	800	5.3
Clay	20,622	1,247	6.0
Clinton	74,218	7,861	10.5
Crawford	6,970	358	5.0
Davless	38,783	2,592	6.6
Dearborn	7,283	291	3.9
Decatur	42,595	4,982	11.6
Dekalb	31,687	1,601	5.5
Delaware	69,034	6,313	9.1
Dubois	20,237	2,468	12.1
Elkhart	23,716	1,714	7.2
Fayette	31,501	3,807	12.0
Floyd	3,078	204	6.6
Fountain	42,143	3,690	8.7
Franklin	29,296	2,898	9.8
Fulton	29,180	2,785	9.5
Gibson	38,327	4,323	11.3
Grant	65,276	6,751	10.3
Greene	28,588	1,712	5.9
Hamilton	72,300	7,544	10.4
Hancock	54,331	7,441	13.6
Harrison	17,164	923	5.3
Hendricks	75,734	5,273	6.9
Henry	79,289	9,037	11.3
Howard	65,553	8,063	12.3
Huntington	58,099	3,308	5.6
Jackson	24,643	2,227	9.0
Jasper	21,161	1,296	6.1
Jay	50,389	4,534	8.9
Jefferson	12,939	568	4.3
Jennings	15,956	899	5.6
Johnson	51,193	6,066	11.8
Knox	45,003	4,743	10.5
Kosciusko	42,978	2,811	6.5
Lagrange	32,592	1,461	4.4
Lake	11,870	1,263	10.6
Laporte	20,715	2,627	12.6
Lawrence	15,295	677	4.4
Madison	67,330	8,217	12.2

THE AVERAGE YEARLY HOG CROP, DEATH RATE, AND PERCENTAGE
OF LOSS IN EACH COUNTY IN INDIANA FOR A PERIOD OF
TEN YEARS, FROM 1898-1908 (continued)

County	Number of Hogs	Number of Deaths	Per cent. of Loss
Marion	31,729	3,968	12.5
Marshall	33,705	1,888	5.6
Martin	13,400	854	6.3
Miami	49,603	4,666	9.4
Monroe	11,018	542	4.9
Montgomery	85,001	8,788	10.3
Morgan	38,514	4,476	11.6
Newton	17,246	1,128	6.5
Noble	35,626	2,181	6.1
Ohio	2,588	122	4.7
Orange	13,304	638	4.8
Owen	14,552	1,346	9.2
Parke	38,394	1,968	5.1
Perry	10,141	647	6.3
Pike	26,415	2,390	9.0
Porter	15,248	1,375	9.0
Posey	22,510	3,606	16.0
Pulaski	18,569	1,135	6.1
Putnam	51,546	2,184	4.2
Randolph	73,295	6,884	9.3
Ripley	19,642	1,016	5.1
Rush	88,653	15,454	17.4
Scott	7,013	299	4.2
Shelby	49,874	8,350	16.7
Spencer	16,200	1,142	7.0
Starke	7,074	778	11.0
Steuben	33,071	1,275	3.8
St. Joseph	17,747	1,405	7.9
Sullivan	37,227	3,706	9.9
Switzerland	4,813	175	3.6
Tippecanoe	44,339	3,786	8.5
Tipton	49,524	6,965	14.0
Union	30,645	3,160	10.3
Vanderburg	7,362	883	12.0
Vermillion	20,260	1,601	7.9
Vigo	18,854	1,932	10.2
Wabash	52,325	3,159	6.0
Warren	30,522	2,643	8.6
Warrick	15,830	822	5.1
Washington	26,203	930	3.5
Wayne	61,513	7,789	12.6
Wells	49,437	5,019	10.1
White	30,945	1,926	6.2
Whitley	33,886	1,286	3.7

CAUSES

The direct or specific cause of hog cholera is an ultra-visible organism, present in the excretions, secretions, and tissues of cholera hogs. De Schweinitz and Dorset in 1903 proved by inoculation tests, that filtrates made from virulent cholera blood containing no organisms demonstrable by microscopic examination, or cultural method, produced typical hog cholera in animals inoculated with them. They further showed that healthy hogs on exposure to the filtrate infected animals contracted hog cholera the same as in a natural outbreak.

The bacillus of hog cholera and bacillus of swine plague discovered by Salmon and Smith in 1885-6, were, previous to the publication of the investigations of de Schweinitz and Dorset, considered the direct or specific causes of the epidemic diseases of swine. After determining the infectiousness of the filtrate disease, these investigators proved by a series of inoculation and exposure experiments that the hog cholera bacillus did not produce typical hog cholera. Pure cultures of the *B. cholerae suis*, when injected beneath the skin (subcutaneously), seldom produced disease in healthy hogs, but when injected into a vein (intravenously), or administered in the feed, severe illness usually resulted. Healthy hogs exposed to the cultural disease remained well, and hogs that recovered from it, sickened and died when exposed to hog cholera.

Other investigators in the United States and Europe have confirmed these results, and it has been shown that the many different forms of bacteria found in the blood and tissues of most cholera hogs are not the specific cause of the disease. The different bacteria previously described may be considered secondary organisms of infection, and may influence the pathogenic changes occurring in the tissues of hogs affected with this disease.

For the past three years the Veterinary Department has been carrying on a line of experimental work with cultures from the tissues of cholera hogs and blood filtrates. This work has been limited to outbreaks occurring in this state. The results are briefly stated in the following tables.

TABLE OF CULTURES FROM CHOLERA OUTBREAKS

Source of culture	Tissue from which culture was made	Character of outbreak	Form of bacteria
Westfield	Spleen	Acute hog cholera	B. coli communis
Veedersburg	Heart	Acute hog cholera	B. coli communis
Delphi	Spleen	Acute hog cholera	B. cholerae suis
Mulberry	Heart	Acute hog cholera	Micrococcus
Marion	Heart	Acute hog cholera	B. cholerae suis
Wabash	Spleen	Acute hog cholera	B. cholerae suis
Goshen	Spleen	Acute hog cholera	B. cholerae suis
Danville	Spleen	Acute hog cholera	B. cholerae suis
Crawfordsville	Heart	Acute hog cholera	B. coli communis
New Palestine	Heart	Acute hog cholera	B. coli communis

TABLE OF CULTURES FROM EXPERIMENTAL HOGS

No. of hog	Method of infection	Source of culture	Organs showing lesions	Form of bacteria
100	Exposed	Heart	Spleen, kidneys, lungs, lymphatic glands	<i>B. cholerae suis</i>
108	Inoculated with virulent blood	Heart	Liver, kidneys, lungs, lymphatic glands	<i>B. coli communis</i>
118	Inoculated with virulent blood	Spleen	Kidneys, intestines, liver, lungs	<i>B. coli communis</i>
116	Inoculated with filtrate	Lymphatic glands	Kidneys, liver, lungs	<i>B. coli communis</i>
996	Inoculated with virulent blood	Spleen	Lungs, kidneys, liver, spleen, lymphatic glands	<i>B. cholerae suis</i>
135	Inoculated with virulent blood	Lungs	Lungs, spleen, kidneys, liver, lymphatic glands	<i>B. cholerae suis</i>
136	Inoculated with filtrate	Spleen	Intestines, liver, lungs, spleen, lymphatic glands	<i>B. cholerae suis</i>
149	Inoculated with virulent blood	Kidneys	Kidneys, liver, lungs, lymphatic glands	<i>B. coli communis</i>
147	Inoculated with virulent blood	Blood	Intestines, kidneys, lymphatic glands, liver	<i>B. coli communis</i>
115	Exposed	Heart	Organs apparently normal	<i>B. coli communis</i>
120	Exposed	Liver	Liver, spleen, kidneys, lymphatic glands	<i>B. coli communis</i>
999	Inoculated with blood of No. 996	Lymphatic glands	Lungs, kidneys, liver, lymphatic glands	<i>B. cholerae suis</i>
151	Inoculated with virulent blood	Liver	Liver, spleen, kidneys, lymphatic glands, lungs	<i>B. coli communis</i>
121	Inoculated with blood of No. 999	Spleen	Lungs, lymphatic glands, intestines, liver, kidneys	<i>B. cholerae suis</i>
105	Exposed	Heart	Liver, intestines, lungs, spleen, lymphatic glands	<i>B. cholerae suis</i>
154	Inoculated with virulent blood	Heart	Kidneys, liver, lymphatic glands, lungs, spleen	<i>B. cholerae suis</i>
155	Inoculated with spleen tissue of No. 154	Liver	Lungs, spleen, liver, kidneys	<i>B. cholerae suis</i>

TABLE OF CULTURES FROM EXPERIMENTAL HOGS (continued)

No. of hog	Method of infection	Source of culture	Organs showing lesions	Form of bacteria
134	Exposed	Liver	Lungs, lymphatic glands, liver, spleen, kidneys	B. cholerae suis
129	Exposed	Liver	Kidneys, lungs, liver, lymphatic glands, spleen	B. cholerae suis
140	Exposed	Spleen	Kidneys, lymphatic glands, spleen, lungs, liver	B. cholerae suis
122	Exposed	Spleen	Kidneys, lymphatic glands, spleen, lungs, liver	B. cholerae suis
121	Exposed	Spleen	Kidneys, lymphatic glands, liver, lungs	B. cholerae suis
118	Exposed	Liver	Spleen, kidneys, lungs, lymphatic glands, liver	B. cholerae suis
127	Inoculated with virulent blood	Blood	Kidneys, lungs, liver, lymphatic glands	B. cholerae suis
124	Exposed	Liver	Spleen, kidneys, lungs, lymphatic glands, liver	B. coli communis
123	Exposed	Heart	Lymphatic glands, kidneys, liver	B. cholerae suis
129	Inoculated with virulent blood	Spleen	Intestines, lungs, lymphatic glands	B. coli communis
131	Exposed	Liver	Kidneys, liver, lungs	B. coli communis
130	Exposed	Liver	Liver, kidneys, intestines, lymphatic glands	B. coli communis
126	Exposed	Blood	Intestines, kidneys, lymphatic glands, liver	B. cholerae suis

TABLE OF HOGS INOCULATED WITH FILTRATES

No. of hog	Amount of filtrate	Results of inoculation	Organs showing lesions	Remarks
132	30 c. c.	No symptoms of disease		Filtrate used 1:20; exposed to hog cholera 33 days after inoculation; died 8 days after exposure
133	30 c. c.	No symptoms of disease		Filtrate used 1:20; exposed to hog cholera 33 days after inoculation; died 8 days after exposure
134	30 c. c.	No symptoms of disease		Filtrate used 1:20; exposed to hog cholera 21 days after inoculation; died 21 days after exposure
139	30 c. c.	No symptoms of disease		Filtrate used 1:20; exposed to hog cholera 21 days after inoculation; died 8 days after exposure
122	20 c. c.	Slight symptoms 7 days after inoculation		Filtrate used 1:20; exposed to hog cholera 25 days after inoculation; did not become sick
105	10 c. c.	Sick 10 days after inoculation; killed 25 days from date of inoculation	Kidneys, intestines, lymphatic glands	Filtrate used 1:5
114	20 c. c.	Sick about 7 days after inoculation; died 11 days from date of inoculation	Intestines, kidneys, lymphatic glands, lungs, liver	Filtrate used 1:10

TABLE OF HOGS INOCULATED WITH FILTRATES (continued)

No. of hog	Amount of filtrate	Results of inoculation	Organs showing lesions	Remarks
115	20 c. c.	Sick about 7 days after inoculation; died 21 days from date of inoculation	Intestines, kid- neys, lymphatic glands, lungs, liver	Filtrate used 1:10
116	20 c. c.	Sick about 10 days after inoculation; killed 24 days from date of in- oculation	Kidneys, liver, lymphatic glands, lungs	Filtrate used 1:10
117	20 c. c.	Sick about 7 days after inoculation; killed 25 days from date of in- oculation	Lungs, intestines, kidneys, liver, lymphatic glands	Filtrate used 1:10
136	28 c. c.	Sick about 10 days after inoculation; died 22 days from date of in- oculation	Intestines, lungs, lymphatic glands, liver, spleen	Filtrate used 1:20

TABLE OF HOGS INOCULATED AND FED CULTURES

No. of hog	Source of culture	Form of bacteria	Amount of bouillon culture	Results	Organs showing lesions	Remarks
101	Rabbit No. 13	B. coli communis	10 c. c.	Did not become sick		Exposed to hog cholera 8 days from date of inoculation; died 23 days after exposure
102	Rabbit No. 13	B. coli communis	10 c. c.	Did not become sick		Did not die on exposure to hog cholera
103	Hog No. 860	B. coli communis	1.5 c. c.	Sick one day after inoculation; killed 25 days from date of inoculation	Lungs, intestines, liver, kidneys	Lesions not marked
106	Hog No. 860	B. coli communis	2.5 c. c.	Did not become sick		Exposed to hog cholera and died 73 days from date of inoculation
107	Check Hog Exp. Lot 2	B. cholerae suis	2.5 c. c.	Sick few days after inoculation; died 35 days from date of inoculation	Intestines, lungs, liver, kidneys	Necrotic inflammation of the intestines.
160	Hog No. 15	B. coli communis	5 c. c.	Sick few days after inoculation; killed 25 days from date of inoculation	Kidneys, lymphatic glands, liver, lungs	Lesions marked

TABLE OF HOGS INOCULATED AND FED CULTURES (continued)

No. of hog	Source of culture	Form of bacteria	Amount of bouillon culture	Results	Organs showing lesions	Remarks
122	Hog No. 15	B. coli communis	5 c. c.	Sick few days after inoculation; died 26 days from date of inoculation	Spleen, liver, lymphatic glands, lungs	Apparently recovered and was inoculated with filtrate of virulent blood 20 days after culture inoculation; died 5 days after filtrate inoculation
118	Rabbit No. 13	B. cholerae suis	4.5 c. c.	Sick few days after inoculation; died 21 days from date of inoculation	Spleen, liver, lymphatic glands, lungs	Lesions marked
129	Hog No. 40	B. coli communis	5 c. c.	Did not become sick		Exposed to hog cholera 16 days after inoculation; became sick and was killed 27 days after exposure
132	Hog No. 29	B. coli communis	7 c. c.	Did not become sick		Exposed to hog cholera 12 days after inoculation; did not die

TABLE OF HOGS INOCULATED AND FED CULTURES (continued)

No. of hog	Source of culture	Form of bacteria	Amount of bouillon culture	Results	Organs showing lesions	Remarks
125	Hog No. 3	B. coli communis	1,000 c. c. fed	Sick 1 day after inoculation; recovered		Exposed to hog cholera 20 days after inoculation; did not die from exposure
126				Sick 1 day after inoculation; recovered	Necrotic inflammation of the intestines	Exposed to hog cholera 20 days after inoculation; became sick and died 21 days after exposure
127				Sick 1 day after inoculation; died 13 days from date of inoculation	Intestines, lymphatic glands, liver, lungs.	Lesions marked
128				Sick 1 day after inoculation; recovered	Necrotic inflammation of the intestines	Exposed to hog cholera 20 days after inoculation; became sick and died 20 days after exposure
119	Hog No. 26	Micrococcus	6 c. c.	Sick few days after inoculation; killed 26 days from date of inoculation	Lungs, kidneys, lymphatic glands	

TABLE OF HOGS INOCULATED AND FED CULTURES (continued)

No. of hog	Source of culture	Form of bacteria	Amount of inoculation culture	Results	Organs showing lesions	Remarks
166	Hog No. 26	Micrococcus	3 c. c. milk culture	Showed slight symptoms		Exposed to hog cholera 10 days after inoculation; became sick and was killed 31 days after inoculation
173	Hog No. 26	Micrococcus	3.5 c. c. 250 c. c.	Sick 1 day after last inoculation; recovered		Exposed to hog cholera 24 days after last inoculation; became sick and was killed 40 days after last inoculation
174	Hog No. 26	Micrococcus	2 c. c. 140 c. c.	Sick 1 day after last inoculation; recovered		Exposed to hog cholera 24 days after last inoculation; became sick and was killed 40 days after last inoculation
114	Hog No. 67	Micrococcus	10 c. c. 20 c. c. milk culture	Sick 4 days after last inoculation; killed 52 days after last inoculation	Kidneys, liver, spleen, lungs	
115	Hog No. 67	Micrococcus	10 c. c. 65 c. c.	Sick 4 days after last inoculation; died 52 days after last inoculation	Lungs, kidneys, liver	Hemorrhagic lungs

Cultures from 10 different outbreaks of acute hog cholera were made. Four of the 10 cultures were *B. coli communis*, five were *B. cholerae suis* and one a micrococcus. Eighteen of the 30 cultures made from the tissues of experimental hogs, that contracted the disease by inoculation and exposure in the pens where *B. cholerae suis* and 12 were *B. coli communis*. Blood from cholera hogs collected in test tubes under proper aseptic precautions, and incubated for several weeks, showed no organisms in a large percentage of cases. These animals contracted the disease by inoculation with cholera blood and by exposure, and the post mortem examination showed typical hog cholera lesions.

Eight hogs were injected intramuscularly and four fed bouillon cultures of the *B. coli communis*. Of the injected hogs three became ill and five showed no symptoms of disease. Of the sick hogs one died after inoculation with a cholera blood filtrate. Three of the five hogs that showed no symptoms of disease, died on exposure to hog cholera. All the culture fed hogs became sick, one fatally so. Of the three sick hogs that lived, two died on exposure to hog cholera.

Milk and bouillon cultures of a micrococcus found in cholera blood were injected intramuscularly into six hogs. Three of the hogs developed marked symptoms of disease. Three of the animals became slightly ill when injected with large quantities of the culture, and on exposure to hog cholera developed a fatal form of the disease.

Eleven hogs were inoculated with blood filtrates from hogs having acute hog cholera. The disease affecting the five hogs that became sick was proven to be hog cholera by inoculation and exposure tests. The large hogs did not develop symptoms of disease when inoculated with small quantities of a dilute blood filtrate. It should be stated in connection with this experiment, that all of the hogs used averaged older and heavier than those used in the culture work. Small Chamberlan filter tubes not marked, and tubes marked F. were used for filtering the blood.

ACCESSORY CAUSES

The wide prevalence of hog cholera can be accounted for by the lack of proper police control and the filthy, unhygienic conditions common in hog houses and yards. In neighborhoods where outbreaks occur, necessary precautions against the spread of the infection are not taken. Cattle, horses and wagons when driven through infected yards, may carry the disease to other farms. Pigeons, because of their habit of feeding in the yards, and dogs

traveling about the neighborhood and feeding on the carcasses of dead hogs may distribute the infection. Hogs running at large may also carry the disease direct. Small streams polluted with the drainage from infected yards are common sources of disease. Large streams are less dangerous. The carcasses of dead hogs when allowed to decompose in the field, or when piled in ditches are centers of infection for the neighborhood. The buying of hogs

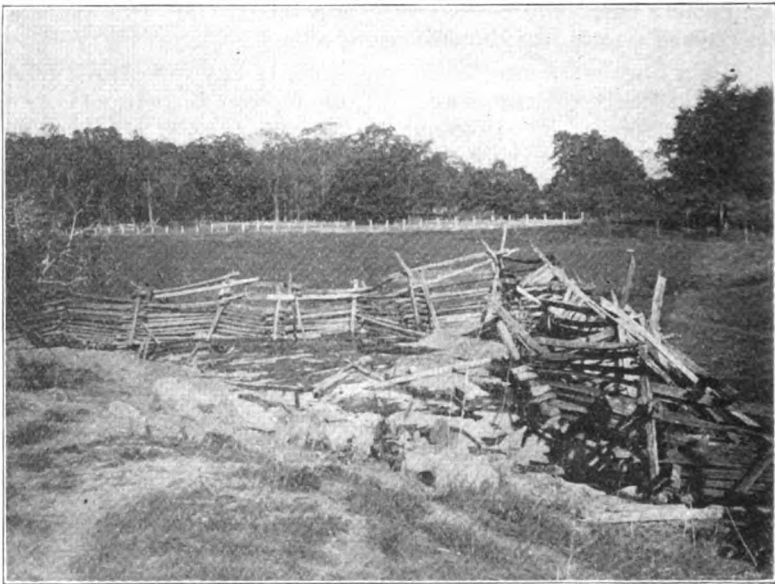


Fig. 4. Hog lot showing unsanitary condition

from diseased herds and stockyards are frequent sources of contagion. Hogs exhibited at fairs and stock shows may become infected in the pens and cars in which they are shipped.

Age is an important predisposing factor in young hogs, and may be greatly increased by crowding them into close quarters and by improper feeding. The feeding of a one-sided ration of corn may be mentioned. This does not meet the needs of the system in growing animals, and they lose vigor and may become unthrifty. This is, no doubt, one cause for the prevalence of the disease in the corn belt.

PERIOD OF INCUBATION

The length of time elapsing between the exposure of the animal to the disease and the development of noticeable symptoms varies from a few days to two or three weeks. The length of the incubation period depends on the susceptibility of the animal, the virulence of the disease and the method of exposure. An acute form of hog cholera indicates a short period, and a chronic form, a long period of incubation. Young and pampered hogs usually develop an acute form of the disease. Hogs inoculated subcutaneously and intramuscularly come down with the disease more quickly than when exposed in the natural way. In the early part of an outbreak the virus is usually most virulent. After the disease has run a course of two or three months it may lose its virulence for large hogs.

SYMPTOMS

The acute form of hog cholera is the most common. The early symptoms are tremors, suggestive of chilling of the body; depression, stiffness and soreness; loss of appetite, vomiting, constipation and diarrhea and inflammation of the skin. Marked weakness, staggering gait and labored or difficult breathing may develop later.

The above symptoms develop more slowly and are more mild in the subacute, than they are in the acute form of the disease. The subacute frequently terminates in the chronic form.

In the chronic form the symptoms extend over a period of several weeks or months. Young animals usually become unthrifty or runted.

In the early part of an outbreak young and fat hogs sometimes die without manifesting noticeable symptoms.

In taking the body temperatures of the animals in a cholera herd, the temperatures of the recently infected animals, not showing noticeable symptoms of the disease, as well as the advanced cases, are found two, five or more degrees Fahrenheit above the normal. Before death sub-normal temperatures may be noted. The higher the fever the more marked are the symptoms of depression. The hog is usually found lying in its bed, or off by itself in a quiet part of the lot. When gotten up and made to walk, it shows marked weakness, the back is arched, the hind feet crossed and the abdomen tucked up. The animal may sometimes stagger and fall after moving a short distance.

The secretions of the skin and mucous membranes are abnormal. The skin in the region of the ears and over the under

surface of the body, and inside of the thighs is moist, or red in color. Just before death the skin may become a purplish red. In the chronic form, a dirty, thickened, wrinkled skin is commonly observed. At first the secretion from the membrane lining the eyelids is thin and watery, but it soon becomes thick and heavy, causing the margins of the lids to adhere to each other.

At first the hog may show a disposition to eat earth, or other indigestible substances. Usually the first symptom of disease noted by the person in charge of the herd is a loss of appetite. However, the animal does not refuse all feed until the disease is well advanced. The constipated condition that precedes the diarrhea may not be noticed in a large percentage of the cases; in others, this symptom may be prominent throughout the attack. Sometimes constipation and diarrhea alternate. Diarrhea is not a prominent symptom in all cases of the disease, but may be considered as constant as most of the other symptoms. The color of the diarrheal discharges may vary according to the character of the feed, and may be more or less tinged with blood and have a very disagreeable odor. The urine may be highly colored.

The respirations and pulse beats are quickened and abnormal in character. Thumps sometimes occur. When the mucous membranes lining the throat and anterior air passages are inflamed and thickened, the respirations are noisy and difficult. The animal may cough on getting up from its bed and moving about. There is at times a noticeable discharge from the nostrils. When the lungs are inflamed, the respirations are quickened and labored. In case the pleural membrane is inflamed the respiratory symptoms are more severe, and the animal shows evidence of pain when the walls of the chest are pressed on with the hands. The pericardium may be inflamed. In such cases the animal is usually found lying down, and when made to walk, staggers and falls.

The central nervous system may be involved in the diseased process. The usual symptoms seen in an inflammation of the brain and its coverings are manifested. A sleepy, comatose condition may end in death, or the animal dies in a convulsion.

POST MORTEM LESIONS

In acute hog cholera the lesions are hemorrhagic in character. Small red spots and blotches are found in different organs and tissues, especially the skin, serous membranes lining the body cavities, intestines, kidneys and lungs.

In the chronic form of the disease ulceration of the mucous membrane lining the stomach and intestines, and sloughing of the skin are common lesions.

The skin over the under side of the neck and body and inside of the thighs may appear red or purplish red in color. Different groups of lymphatic glands (inguinal, sublumbar, mesenteric, etc.) are larger than normal. They may vary in color from grayish red to deep red. The peritoneum (lining membrane of the abdominal cavity) and the mesenteries (membrane supporting the intestines)

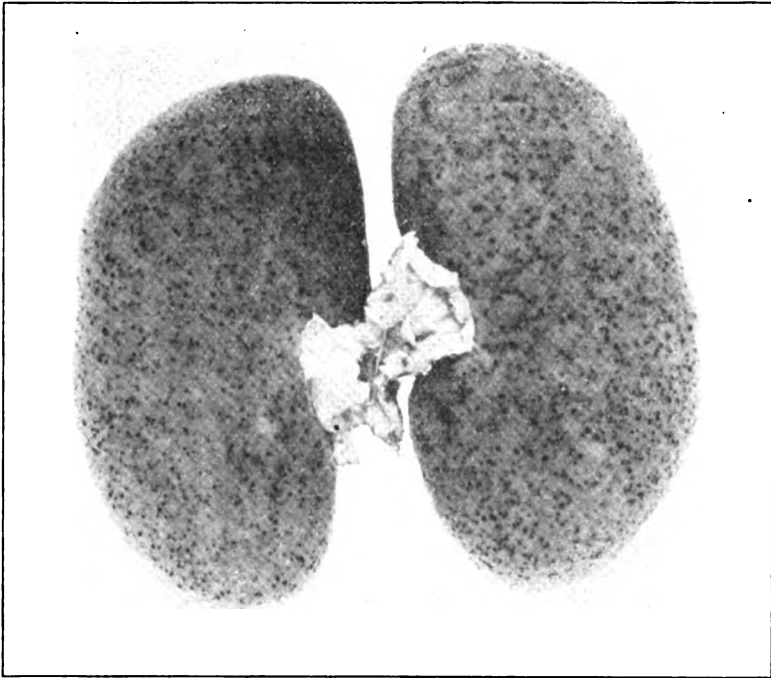


Fig. 5. Kidneys showing typical hog cholera lesions

may show red spots, usually about the size of the head of a pin. The walls of the small and large intestines show similar spots.

The appearance of the inflamed kidneys varies. They appear rather dark, or pale in color. Usually, they are light colored with small red spots or blotches scattered through them.

The spleen is usually found enlarged and soft. It may be smaller than normal. Frequently no evidence of the disease is shown by this organ.

The liver lesions are not characteristic of the disease. In the acute type, the organ may be enlarged and dark, or mottled and light colored, and in the chronic form, pale and yellowish in color.

The intestinal lesions vary according to the form of the disease. The intestinal mucous membrane and wall may show red spots varying in size, or a general red color or inflammation. In the latter



Fig. 6. Ulceration of the lining membrane of the large intestine

case the membrane is thickened. Changes similar in character are found in the walls of the stomach. The above lesions are not constant and no change other than a slight redness of the inner layer may be noted. In the chronic form, ulceration of the lining membrane of the stomach and intestines is a common lesion.

The pleural membrane lining the chest cavity and covering the lungs, and the membrane around the heart (pericardium) may show red spots. In case the inflammation is marked the pleura is thick-

ened and adhered. The pericardium may show similar changes. Considerable fluid is sometimes present in the pericardial sack. The heart sometimes shows red spots similar to those found on the pericardium.

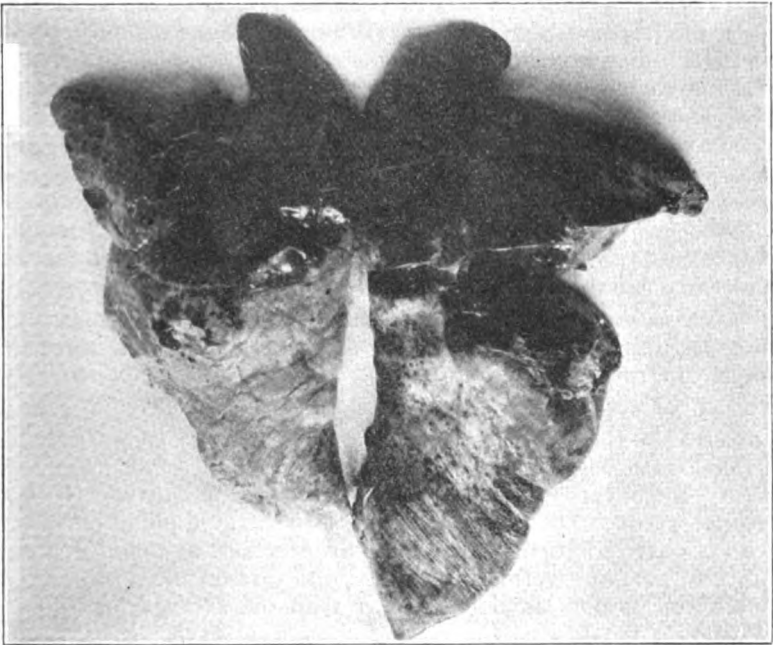


Fig. 7. Lungs of a cholera hog

The diseased changes present in the lungs vary in character. Frequently no hog cholera lesions are found in these organs. In acute hog cholera the surface of the lungs frequently shows red spots, similar to those found in other tissues. Large portions of the lungs may be inflamed, solid red or dark colored. When the inflammation is chronic, abscesses and cheesy degenerative centers are found on sectioning the organ.

HYGENIC PREVENTIVE MEASURES

Hog cholera is the most widespread infectious disease of hogs in this state, and for this reason all possible precautions against herds becoming infected must be taken.

Proper methods of feeding and care are necessary in order to keep the herd in a healthy, growing condition. Healthy hogs possess

a slight degree of resistance against disease, and this factor plays no small part in the control of hog cholera. Filthy, crowded quarters, lack of exercise and wrong methods of feeding overcome natural immunity, and are secondary factors in the spread of disease.

There is no place on a farm where disinfectants are so necessary as in the hog houses and yards. Whitewash, lime, chloride of lime and stock dips are the disinfectants commonly used. Pastures and lots may be cleaned up by moving the hogs for a few months each year and cleaning away all litter. The unused lots can be put to good use if plowed and sowed to some forage crop.

Necessary precautions against the food and drinking water becoming contaminated must be observed. The importance of clean water, clean feed, and clean troughs and feeding floors should be emphasized. Muddy yards, when in use a few years, become filthy and endanger the health of the herd.

Yards should be well drained and all wallow holes filled. Pens and pastures, through which the drainage from swine enclosures higher up, runs, should not be used.

Hogs coming from other herds, or stock shows should be excluded from the home herd until they are positively shown to be free from disease. They should be quarantined in yards set off for this purpose. Such yards should not communicate in any way with the regular yards. They should also be cleaned by dipping or washing with a water solution of a reliable disinfectant, as there is a possibility of carrying germs in the dust and dirt on their bodies. The quarantine period should be longer than the average period of incubation. Three weeks is as long as is necessary.

The possible introduction of the disease into the pens by people, dogs, birds, etc. should be guarded against, especially if cholera is present in the neighborhood. Whenever it is necessary for a person to enter a hog lot where the disease is present, the shoes should be cleaned and disinfected on leaving. Persons taking care of cholera hogs should observe the necessary precautions against the distribution of the disease and see that others practice like precautions.

CARE OF A DISEASED HERD

When an outbreak of hog cholera occurs on a farm, the herd should be quarantined and all possible precautions taken against the spread of the infection in the neighborhood. The separation of the herd into small bunches of about a dozen animals is sometimes practiced. This is not advisable, as the work of caring for the

animals is greatly increased and the infection scattered over a wide area, proportionately increasing the opportunity for infecting neighboring farms.

If the houses and yards are well arranged and can be cleaned and disinfected, it is not advisable to move the animals, but if the quarters are old and more or less tumbled down, and the yards littered with corn cobs, manure piles, straw stacks, etc., it is advisable to provide better quarters. Such yards should be well drained. During the warm months of the year, plenty of range and protection from the sun and rain are necessary. A recently mowed meadow or a blue grass pasture, and a low shed open on all sides and amply large for the herd to lie under, give the animals a clean range and comfortable, cool quarters. Roomy, dry, well ventilated sleeping quarters and yards that have good surface drainage are best when the weather is cool and wet.

In most outbreaks it is advisable to separate the sick from the well hogs. Early in the outbreak and in the subacute form this is practical.

A very light ration consisting of a thin slop of shorts or other ground feed should be fed. Powdered copper sulfate may be given in the feed and drinking water. For convenience of mixing with the feed, eight ounces of the powdered drug may be dissolved in one gallon of warm water and one pint of the solution added to each 10 gallons of slop and water fed. This method of feeding should be used as soon as symptoms of disease are noticed and continued for a time after recovery. The entire herd should be dieted and made to clean up their feed quickly. Water and slop should not be left in the troughs for the hogs to wallow in, and the troughs should be disinfected and turned bottom side up as soon as the hogs have finished feeding and drinking.

A disinfectant should be sprayed or sprinkled about the feed troughs, floors, sleeping quarters, etc., daily.

The care and treatment of the herd require work and close attention to details on the part of the attendant. Indifferent, careless treatment is of no use in this disease.

Our experience with hog cholera has shown us that the most successful line of treatment consists of good care, a light diet, and the liberal use of disinfectants; that treatment should be used early in the outbreak and continued for several weeks; that the subacute form of the disease responds to this treatment; that it is of little use to attempt treatment in badly infected herds.

The dead hogs should be burned. This is not a difficult task if the bodies are placed on top of a pile of wood that burns quickly

and makes a hot fire. If the body is disposed of by burying, it should be covered with a few inches of lime.

At the end of the outbreak everything should be cleaned and disinfected. After a few weeks the yards should be plowed. If the herd has been moved from old to new quarters, it is of course unnecessary to wait until the end of the outbreak before giving the old quarters a thorough cleaning and disinfecting.

TREATED HERDS FROM WHICH COMPLETE REPORTS WERE RECEIVED

No. of herd	Number deaths before beginning treatment	Period between treatment and first death	Number well and sick hogs in herd	Number animals recovered	Remarks
1	22	13 days	41	10	Herd made up mostly of young pigs
2	several pigs	1 day	39	24	Most of loss occurred among young pigs
3	30	4 months	26	25	Had chronic form of disease; few deaths every week until given new quarters
4	27	21 days	107	51	Herd badly diseased at beginning of treatment
5	4	10 days	21	21	Subacute form of disease; conditions good
6	8	14 days	96	94	Care given herd and quarters, best of any herd treated
7	8	7 days	35	21	Deaths occurred mostly among young pigs; conditions in lots unsanitary
8	52	2 months	34	33	At time treatment began this portion of herd began showing symptoms of disease
9	12	12 days	38	28	Herd not visited
10	1	5 days	23	15	Conditions in lots and houses, very unsanitary
11	2	few days	277	277	Twenty-seven hogs sick at beginning of treatment; herd not visited
12	5	few days	123	99	Conditions fairly good

HOG CHOLERA SERUM AND VACCINES

The economic importance of hog cholera from a very early period in its history has stimulated investigation work along the lines of preventive and curative treatment. In the latter part of the

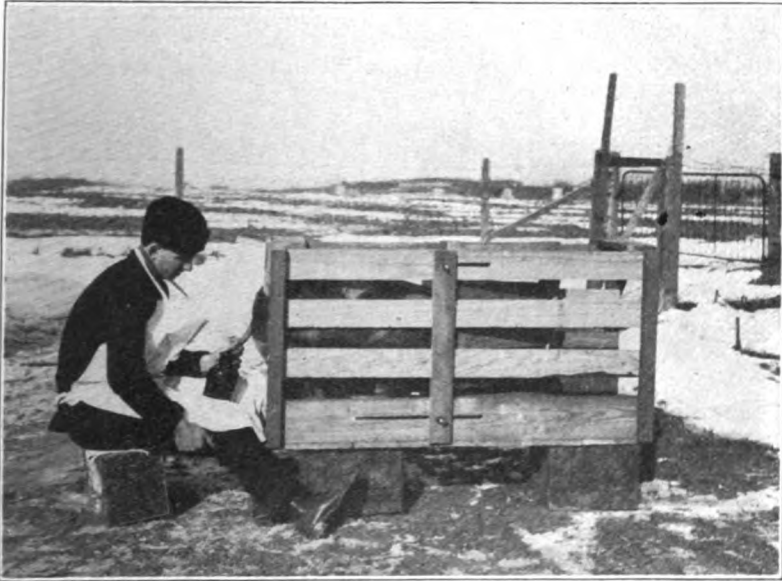


Fig. 8. Bleeding a hyperimmune from the tail

90's the Bureau of Animal Industry, United States Department of Agriculture, carried on extensive field experiments with a serum prepared from cultures of *B. cholerae suis* and *B. suis*septicus. This was a failure so far as the control of the disease was concerned, but because it failed to protect exposed animals, those engaged in the work questioned the relation of the two organisms mentioned to the disease. This led to a line of investigation work that resulted in our present control methods and knowledge of the disease.

The credit of developing the first, and at present only successful hog cholera serum and method of vaccination, belongs to Drs. Dorset and Niles of the Bureau of Animal Industry. After several years of careful experimental work this serum was used in the field and its efficiency demonstrated. At a conference of state and federal officers, held at Ames, Iowa, June, 1908, the methods

of serum production were demonstrated and its use as a preventive and curative agent was discussed. This resulted in a number of the experiment stations and state officials taking up the work of serum production on a small scale, and in several states special appropriations for the work have been made.

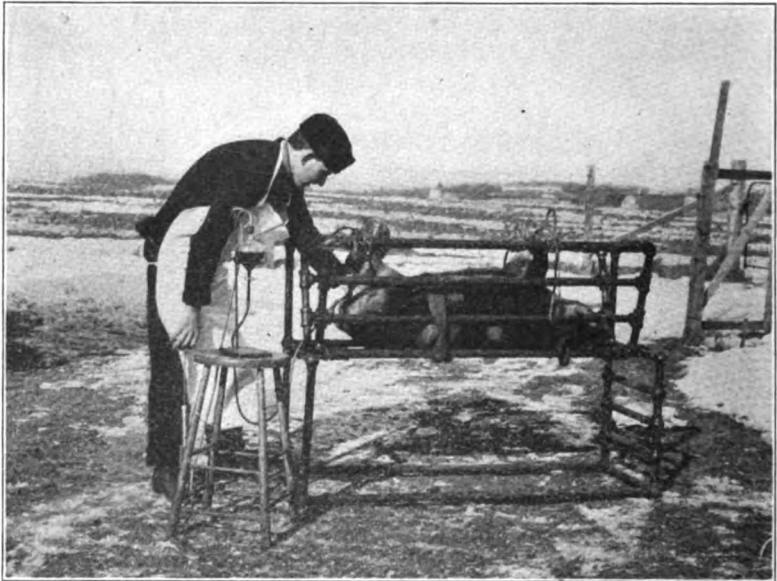


Fig. 9. The quick subcutaneous method of producing a hyperimmune

METHODS OF PREPARING THE DORSET-NILES SERUM

As the hog cholera organism cannot be grown in the laboratory, laboratory cultures are not available for the production of a protective serum and cholera blood of high virulence is used instead.

Young, thrifty hogs weighing from 80 to 100 pounds are used for the production of the virulent blood. They are exposed to hog cholera by inoculating them with a small quantity of virulent blood and if highly susceptible, become fatally ill in from eight to 14 days. The hog is then killed by cutting the carotid artery near the base of the neck, the blood collected, whipped or defibrinated, and if not used immediately, placed in an ice box. In collecting the blood, proper precautions must be taken against dirt and germs from the

outside getting into it. Even when kept at a low temperature it cannot be safely used for the production of the hyperimmune later than 24 hours from the time it is removed.

In case the hog does not show marked cholera lesions, the blood is not used for the production of the hyperimmune, or if it is, a larger quantity than recommended is injected. Blood of low virulence does not produce a serum of high potency.

Immune hogs are used for serum production. They must be healthy and vigorous. From 150 to 200 pounds is the most convenient weight. As it is necessary to remove a piece of the tail every time the animal is bled, these animals should possess heavy tails.

The injection of the virulent blood into the immune hog is for the purpose of stimulating the production of protective substances in the body of the animal and raising the protective properties of the blood. A hog treated in this manner is termed a hyperimmune and a small quantity of its blood when injected into a susceptible hog prevents it from taking hog cholera if exposed at that time to the disease.

The several different methods of producing a hyperimmune are as follows: the slow and quick subcutaneous, the intravenous and the intra-abdominal.

In the subcutaneous methods the points of injection are the inner regions of the thighs and shoulders. The apparatus used is a pressure pump, flask, hypodermic needle with cut off and connecting rubber tubing. In the slow subcutaneous, three injections at intervals of one week are made. The quantities of blood given are as follows: 1 c. c., 2.5 c. c., and 5 c. c. per pound of body weight.

In the quick subcutaneous, one injection of 10 c. c. per pound of body weight is given.

In the intravenous method the virulent blood is injected into the ear vein. One injection of 5 c. c. per pound of body weight is given. The injecting apparatus is a flask for the blood, hypodermic needle and connecting rubber tubing.

In the intra-abdominal method the above apparatus may be used. The quantity of blood injected is 10 c. c. per pound of body weight.

The hyperimmune is ready for the first tail bleeding in from one to two weeks after the injection of the virulent blood. Three or four tail bleedings are made at intervals of about one week. The animal is then killed and the blood collected, or following the third or fourth bleeding, it is re-hyperimmunized. About half the quantity

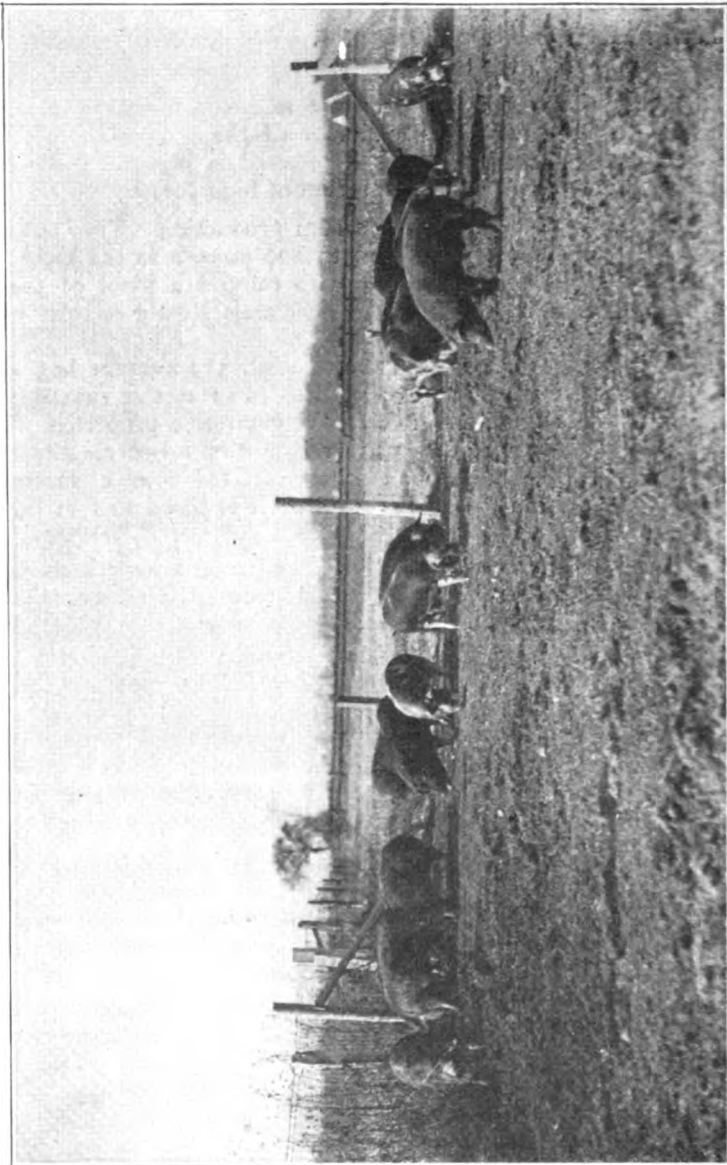


Fig. 10. A herd of hyperimmunes

of blood recommended in the production of the hyperimmune may be used in re-hyperimmunizing.

At a conference of state and federal officials held December 2, 1909, the following methods of standardizing hog cholera virus and testing the potency of hyperimmune serum were adopted.

"1. The Standardization of Hog Cholera Virus which is Used for Hyperimmunization.—

(a) Inject at least two pigs intramuscularly, giving each 2 c. c. of the defibrinated diseased blood which is to be tested. This blood should not be more than 24 hours old, and should have been kept at a temperature not higher than 55° F.

(b) The test pigs should weigh not less than 50 pounds each and after injection should be placed in a small disinfected pen with at least one susceptible uninoculated pig of similar weight and preferably from the same litter.

(c) The virus shall not be considered suitable for use unless the inoculated pigs become visibly ill within eight days and die within 15 days after inoculation. The carcasses of these pigs must show undoubted lesions of hog cholera. Furthermore, the contagiousness of the disease induced by the blood inoculations must be demonstrated by the contraction of the disease by the check pig within 12 days after the appearance of illness in the inoculated pigs.

2. The Handling of Blood to be Used for Hyperimmunization.—

The diseased blood should be collected and manipulated under strict aseptic precautions, stored at a temperature not exceeding 55° F., and used within 24 hours after drawing. It is recommended that defibrination be postponed until immediately before the use of the blood.

3. Testing the Potency of the Hyperimmune Serum.—

(a) If the plan of testing the mixed bleedings of each hyperimmune be adopted by the producer, then we recommend that the test shall be carried out in the following manner:

Inoculate three hogs, each weighing from 50 to 100 pounds with 2 c. c. each of virulent blood. Inject two of these simultaneously with 15 c. c. each of the serum to be tested. If the hog receiving virulent blood only sickens with hog cholera within eight days and is apparently ready to die within 15 days, while the two receiving immunizing serum continue in good health, then the serum may be considered suitable for field use in doses of 20 c. c. for hogs weighing 50 to 100 pounds.

(b) If the plan of testing the mixed sera of several hyperimmunes be adopted by the producer, then inject intramuscularly nine similar pigs weighing between 50 and 100 pounds with 2 c. c. each of virulent blood. Give each of three of these 15 c. c. of the immunizing serum to be tested. Give three others 20 c. c. each of the



Fig. 11. A house for hogs used for testing serum.

serum to be tested. If all those receiving immunizing serum continue in good health and two or more of the three checks become ill of cholera within eight days and are apparently going to die within 15 days, the serum shall be considered suitable for field use in doses of 20 c. c. for hogs weighing from 50 to 100 pounds. If one or more of the pigs receiving 15 c. c. of the serum become obviously sick of cholera and the three pigs receiving 20 c. c. each of the immunizing serum all continue in good health, then the serum may be used in field work in suitable increased doses.

4. The Use of Preserved Virus for Simultaneous Inoculation.—

In order to determine whether or not it is advantageous to add a preservative to the virus used in connection with serum in the Simultaneous Inoculation, we recommend that trials be made with virus containing varying quantities of preservatives and kept in contact with the preservatives for varying periods of time."

THE USE OF NORMAL SALT SOLUTION IN THE PRODUCTION OF A HYPERIMMUNE

A few hours before they were killed, 3500 c. c. of normal salt solution were injected in the abdominal cavities of two virulent-blood hogs. After bleeding them the solution was removed. The quantity collected was 1950 c. c. This was injected into an immune hog weighing about 150 pounds. It was found that the serum from this hog was as potent as the serum from other hyperimmunes produced by the use of virulent blood. The quick subcutaneous method was used.

THE SERUM SIMULTANEOUS METHOD AND TREATMENT OF SICK HERDS WITH SERUM

Hogs that are to be treated with serum, or vaccinated by the serum-simultaneous method should be dieted and given clean quarters with plenty of straw bedding, for at least 12 hours before they are handled. The skin over the region where the serum and blood are injected should be cleaned with a disinfectant. A two per cent. water solution of a good grade of tar disinfectant may be used, and the part scrubbed with the solution, so as to clean it as thoroughly as possible. The above precautions against the entrance of filth and germs through the opening in the skin made by the needle are necessary. Unless properly observed, septic infection or blood poisoning and fibrous formations occur.

The serum is usually injected into the muscles of the inside of the thigh. A glass barreled 20 c. c. hypodermic syringe with a short slip on needle is to be preferred for injecting the serum. In vaccinating hogs two syringes, one for the serum and one for the virulent blood are necessary. Usually a 6 c. c. glass barreled hypodermic syringe is used for the virulent blood, and the injection made beneath the skin of the opposite thigh into which the serum is injected. The hog is exposed to the disease by this method and at the same time given a protective dose of serum. This should be practiced in the absence of exposure to the disease from the yards or surroundings.

In recently infected herds the body temperatures of the hogs should be taken in order to separate the healthy from the diseased animals. This should be done in order to determine the quantity of serum necessary. Depending on the weight and extent of exposure, infected animals should receive from one-half to twice the dose given the healthy hogs.



Fig. 12. Vaccinating a hog

More than 1300 hogs have been vaccinated by the serum-simultaneous method with a loss of about one and one-half per cent. This loss was due largely to septic infection.

A larger number of hogs have been treated with the serum than were vaccinated. About 4000 hogs have been treated. The loss has been about 22 per cent. Many of the herds treated were badly infected and poorly cared for. It is impractical to attempt

treatment under such conditions, and it is a waste of serum that might be used to a good advantage in an exposed or recently infected herd. The quantity of serum used under such conditions represented a large portion of that produced by the Department. The total amount of serum produced was sufficient to vaccinate 12,000 hogs if 20 c. c. are taken as the average vaccination dose.

To secure funds for the work, the Department charges one and one-half cents per c. c. for the serum and one cent per c. c. for the virulent blood. This is a part of the cost of production and distribution. The average vaccination dose is 20 c. c. of serum and 2 c. c. of virulent blood, making the average cost of vaccinating young hogs about 32 cents.

In ordering serum the owner must state the condition, number and weight of the animals in the herd. Serum will not be furnished for the treatment of badly infected herds. For the present and until the method is better understood by farmers and stockmen, serum will not be sent direct to them. So far as possible, a field man from the Department will visit and treat or vaccinate the herd. Serum may be secured through the local veterinarian and administered by him without extra charge to the owner.

THE NATURAL IMMUNITY OF HOGS

From a very early period in the history of hog cholera, breeders have been looking for a breed of hogs that possesses a natural immunity against this disease. Not many years ago a certain well known breed was supposed to possess a large degree of immunity. Later the southern razor-back was supposed to be cholera proof. The mule-foot is the latest breed that is believed by some breeders to be cholera proof. In order to answer inquiries regarding the natural immunity of the mule-foot hog, a test was made in our experimental pens.

Four pure bred mule-foot hogs and four hogs of mixed breeding, averaging about 40 pounds in weight, were used in making the test. The hogs were exposed in the natural way, by turning them into an infected pen in which hogs having acute hog cholera had died. All of the mule-foot hogs contracted the disease, three developing the acute, and one the chronic form. Three became fatally ill and the fourth recovered after several weeks. Three of the hogs of mixed breeding sickened and died or were killed, and the fourth showed no symptoms of disease.

It may be concluded from this test that the mule-foot breed of hogs is not naturally immune from hog cholera. They no doubt possess an individual immunity the same as in other breeds.

Inquiry is frequently made regarding the acquired immunity of pigs from immune mothers. In answer to this question the following observations may be mentioned.

An immune sow several years old that had been fed the tissues of cholera hogs while pregnant, gave birth to six pigs in an infected pen. At four weeks of age the pigs weighed about 25 pounds and were in fine health. A few days later they developed symptoms of disease, and in about six weeks all had died. The lesions were marked in most of the pigs, and showed a chronic form of hog cholera.

A pregnant sow was vaccinated by the serum-simultaneous method, and injected intramuscularly with 200 c. c. of virulent blood. A few weeks later she gave birth to three pigs. These pigs remained well until they were several weeks old, but finally died of hog cholera, as a result of exposure in the pen.

Although the pigs were exposed to acute hog cholera they did not contract this form of the disease. This was possibly due to a slight degree of immunity acquired from their mothers.

STATE LAWS REGULATING HOG CHOLERA

"AN ACT entitled an act to prevent the spread of contagious diseases among swine, defining the duties of railroad companies, stock yard associations, the managers of fair grounds and individuals in relation thereto, defining certain misdemeanors, for making this act effective, fixing certain penalties for the violation thereof, and declaring an emergency.

(Approved March 5, 1897.)

Section 1. *Be it enacted by the General Assembly of the State of Indiana*, That it shall be the duty of all railroad companies and all stock yard associations operating in this State to thoroughly cleanse and disinfect all cars in which hogs are shipped to their yards, immediately after unloading the hogs from the cars, and to keep their pens in which hogs are kept thoroughly cleansed and disinfected. And it shall be the duty of the managers of all fair grounds in the State, where swine are placed on exhibition, to thoroughly cleanse and disinfect and to keep cleansed and disinfected all the pens in which swine are kept, and all crates in which swine are brought to such fair shall be cleansed and disinfected immediately upon their being received at the fair grounds. And it shall be the duty of the managers of such fairs, before receiving any swine into such pens, to require and take from the

proposed exhibitor an affidavit that the swine presented for exhibition have not within the two months last passed, been exposed to any swine disease, and that he did before shipping such swine wash the same with a solution containing not less than one-tenth part of pure carbolic acid and that the car in which such swine were shipped was thoroughly cleansed and disinfected before said swine were loaded in it.

Sec. 2. That it shall be unlawful for any person to drive upon any public highway, or suffer to run at large or to ship in any vehicle or railroad car, any swine, knowing the same to be infected with any disease, but the breeder or owner of any herd of swine which becomes infected with any disease, may within five days after the first indication that such herd is so infected, separate and ship and market all well and healthy hogs from such herd, and it shall be the duty of all breeders and owners of hogs in this State which die with any disease to burn each carcass to ashes within ten hours after death.

Sec. 3. It shall be unlawful for anyone owning or controlling swine, knowing the same to be infected with disease, to allow such swine to have access to any stream of running water in this State, so that the water in such running stream to which such diseased swine have had access may flow down through the lands of others from where such infected herd is kept.

Sec. 4. That any manager of any railroad company or the manager of any stock yards, operating in this State, who shall fail or refuse to cleanse and disinfect the cars at such yards, or fail to keep their pens cleansed and disinfected as required by this act, and any managers of fair grounds who shall fail or refuse to cleanse and disinfect their pens and crates and require from the exhibitor the affidavit required in this act, and any person who drives upon any public highway or suffers to run at large or ships in any vehicle or railroad car any swine, knowing the same to be infected with disease, and any breeder or owner of any herd of swine which becomes infected with any disease who, shall after five days from the time he discovers said herd is so infected, shall ship and market hogs from such diseased herd or shall fail and refuse to burn the carcasses of hogs in such herd, dying from such disease as provided in this act; if any owner or owners of any such hog or shoat so dying with disease or any person or persons having the care or custody thereof having knowledge of the fact ten hours, or upon receiving notice thereof ten hours shall fail, neglect or refuse to comply with the provisions of the preceding section it shall be lawful for any person or persons to enter upon the premises,

after notifying the owner of the same where the carcass or carcasses of any hog or shoat may be, and burn such carcass or carcasses, committing no unnecessary damage and for each carcass so burned, he, she, or they may recover the sum of one dollar for each carcass so burned, in a civil action before any Justice of the Peace of the township where the defendant or one of the defendants resides, from the owner or owners of any such hog or shoat, or from any person or persons having the care and custody thereof; and any person who shall allow swine infected with any disease to have access to any stream of running water on his premises, then he and they or any person or persons who shall violate any of the provisions of this act, shall be deemed guilty of a misdemeanor and upon conviction before any court having criminal jurisdiction shall be fined in any sum not less than twenty-five dollars and not more than five hundred dollars.

Sec. 5. Whereas an emergency exists for the immediate taking effect of this act, therefore the same shall take effect and be in force from and after its passage."

"AN ACT Concerning Public Offenses

(Approved March 10, 1905.)

Hog Carcass—Transporting.

Sec. 592½. Whoever hauls, moves or transports upon any public highway the carcass, or any part thereof, of any hog that shall have come to its death from disease; or whoever shall so haul, move or transport upon any such highway any hog while such animal is afflicted with disease shall, on conviction, be fined not less than ten dollars nor more than five hundred dollars, or may be imprisoned in the county jail not exceeding six months, or may be punished by both such fine and imprisonment. The hauling, moving or transporting of any such hog, carcass or part thereof, to, or by the owner or employe of, any rendering or desiccating establishment, shall be prima facie a violation of this section: *Provided, however,* That the provisions of this section shall not apply to the streets, alleys or public highways of any incorporated town or city."

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Agricultural Experiment Station

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CONCENTRATED COMMERCIAL FEEDING STUFFS

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CONCENTRATED COMMERCIAL FEEDING STUFFS

W. J. JONES, JR., O. C. HAWORTH, C. CUTLER, A. C. SUMMERS.

Information received from our inspectors leads us to believe that in many parts of the state, the requirements of the Indiana Feeding Stuff Law are not well understood and it is therefore deemed advisable to reprint the amended law in full in this report.

INDIANA FEEDING STUFF LAW

The full text of the law governing the sale of commercial feeding stuffs as amended by the Indiana Legislature in 1909, is as follows:

Sec. 1. Be it enacted by the General Assembly of the State of Indiana, That before any concentrated commercial feeding stuff is sold, offered or exposed for sale in Indiana, the manufacturer, importer, dealer, agent or person who causes it to be sold, or offered for sale, by sample, or otherwise, within this State, shall file with the State Chemist of Indiana at the Indiana Agricultural Experiment Station, Purdue University, a statement that he desires to offer such concentrated commercial feeding stuff for sale in this State, and also a certificate, the execution of which shall be sworn to before a notary public, or other proper official, for registration, stating the name of the manufacturer, the location of the principal office of the manufacturer, the name, brand or trade-mark under which the concentrated commercial feeding stuff will be sold, the ingredients from which the concentrated commercial feeding stuff is compounded, and the minimum percentage of crude fat and crude protein allowing one per cent. of nitrogen to equal six and twenty-five hundredths per cent. of protein, and the maximum percentage of crude fiber which the manufacturer or person offering the concentrated commercial feeding stuff for sale guarantees it to contain; these constituents to be determined by the methods recommended by the association of official agricultural chemists of the United States.

Sec. 2. Any person, company, corporation or agent that shall sell or offer, or expose for sale, any concentrated commercial feeding stuff in this state, shall affix, or cause to be affixed, to every package or sample of such concentrated commercial feeding stuff in a conspicuous place on the outside thereof, a tag or label which shall be accepted as a guarantee of the manufacturer, importer, dealer or agent, and which shall have plainly printed thereon in the English language the number of net pounds of concentrated commercial feeding stuff in the package, the name, brand or trade mark under which the concentrated commercial feeding stuff is sold, the name of the manufacturer, the location of the principal office of the manufacturer, and the guaranteed analysis stating the minimum percentage of crude fat and crude protein, determined as described in section one (1), and the ingredients from which the concentrated commercial feeding stuff is compounded. For each one hundred pounds, or fraction thereof, the person, company, corporation or agent, shall also affix the stamp purchased from the State Chemist, showing that the con-

centrated commercial feeding stuff has been registered as required by section one (1) of this act, and that the inspection tax has been paid. When concentrated commercial feeding stuff is sold in bulk a tag, as hereinbefore described, and a State Chemist stamp shall be delivered to the consumer with each one hundred pounds, or fraction thereof: Provided, That State Chemist's stamps shall be issued to cover twenty-five (25), fifty (50) and one hundred (100) pounds.

Sec. 3. The State Chemist shall register the facts set forth in the certificate required by section 1 of this act in a permanent record, and shall furnish stamps or labels showing the registration of such certificate to manufacturers or agents desiring to sell the concentrated commercial feeding stuff so registered at such times and in such numbers as the manufacturers or agents may desire: Provided, That the State Chemist shall not be required to sell stamps or labels in less amount than to the value of five dollars (\$5.00) or multiples of five dollars for any one concentrated commercial feeding stuff: Provided, further, That the State Chemist shall not be required to register any certificate unless accompanied by an order and fees for stamps or labels to the value of five dollars (\$5.00) or some multiple of five dollars: Provided, further, That such stamps or labels shall be printed in such form as the State Chemist may prescribe: Provided, further, That such stamps or labels shall be good until used.

Sec. 4. On or before January 31st of each year, each and every manufacturer, importer, dealer, agent or person, who causes any concentrated commercial feeding stuff to be sold or offered or exposed for sale in the State of Indiana shall file with the State Chemist of Indiana a sworn statement, giving the number of net pounds of each brand of concentrated commercial feeding stuff he has sold or caused to be offered for sale in the State for the previous year ending with December 31st: Provided, That when the manufacturer, jobber or importer of any concentrated commercial feeding stuff shall have filed the statement aforesaid, any person acting as agent for said manufacturer, importer or jobber, shall not be required to file such statement.

Sec. 5. For the expenses incurred in registering, inspecting and analyzing concentrated commercial feeding stuffs, the State Chemist shall receive for stamps or labels furnished to cover one hundred (100) pounds, eighty (80) cents per hundred; to cover fifty (50) pounds, forty (40) cents per hundred and to cover twenty-five (25) pounds, twenty (20) cents per hundred. The money for said stamps or labels shall be forwarded to the said State Chemist, who shall pay all such fees received by him to the director of the Indiana agricultural experiment station, Purdue university, by whom they shall be paid into the treasury of said Indiana agricultural experiment station, the board of control of which shall expend the same, on proper vouchers to be filed with the auditor of state in meeting all necessary expenses in carrying out the provisions of this act, including the employment of inspectors, chemists, expenses in procuring samples, printing bulletins, giving the results of the work of feeding stuff inspection as provided for by this act, and for any other expenses of said Indiana agricultural experiment station, as authorized by law. The director of said experiment station shall make to the governor on or before February 15th of each year, a classified report, showing the total receipts and expenditures of all fees received under the provisions of this act.

Sec. 6. Any person, company, corporation or agent that shall offer for sale, sell or expose for sale any package or sample or any quantity of any concentrated commercial feeding stuff which has not been registered with the State Chemist as required by section 1 of this act, or which does not have affixed to it the tag and stamp required by section 2 of this act, or which is found by an analysis made by or under the direction of the State Chemist to contain a smaller percentage of crude fat or crude protein than the minimum guarantee, or which shall be labeled with a false or inaccurate guarantee, or who shall adulterate any concentrated commercial feeding stuff with foreign mineral matter or other foreign substance, such as rice hulls, chaff, mill sweepings, peanut shells, corn bran, corn cob meal, oat hulls, oat clippings, or other materials of less or of little or no feeding value without plainly stating on the label hereinbefore described, the kind and amount of such mixture, or who shall adulterate with any substance injurious to the health of domestic animals, or who shall alter the stamp, tag or label of the State Chemist, or shall use the name and title of the State Chemist on a stamp, tag or label not furnished by the State Chemist, or shall use the stamp, tag or label of the State Chemist the second time, or shall refuse or fail to make the sworn statement required by section 4 of this act, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined in the sum of fifty dollars for the first offense, and in the sum of one hundred dollars for each subsequent offense. In all litigation arising from the purchase or sale of any concentrated commercial feeding stuff in which the composition of the same may be involved a certified copy of the official analysis signed by the State Chemist shall be accepted as prima facie evidence of the composition of such concentrated commercial feeding stuff: Provided, That nothing in this act shall be construed to restrict or prohibit the sale of concentrated commercial feeding stuff in bulk to each other by importers, manufacturers or manipulators who mix concentrated commercial feeding stuff for sale, or as preventing the free, unrestricted shipment of these articles in bulk to manufacturers or manipulators who mix concentrated commercial feeding stuff for sale, or to prevent the State Chemist, or the Indiana Agricultural Experiment Station, or any person or persons deputized by said State Chemist, making experiments with concentrated commercial feeding stuffs for the advancement of the science of agriculture.

Sec. 7. The State Chemist or any person by him deputized is hereby empowered to procure from any lot, parcel or package of any concentrated commercial feeding stuff offered for sale or found in Indiana a quantity of concentrated commercial feeding stuff not to exceed two pounds: Provided, That such sample shall be drawn during reasonable business hours, or in the presence of the owner of the concentrated commercial feeding stuff or of some person claiming to represent the owner.

Sec. 8. Any person who shall prevent or strive to prevent the State Chemist, or any person deputized by the State Chemist, from inspecting and obtaining samples of concentrated commercial feeding stuff, as provided for in this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in the sum of fifty dollars for the first offense, and in the sum of one hundred dollars for each subsequent offense.

Sec. 9. The State Chemist is hereby empowered to prescribe and enforce such rules and regulations relating to concentrated commercial feeding stuff as he may deem necessary to carry into effect the full intent

and meaning of this act, and to refuse the registration of any feeding stuff under a name which would be misleading as to the materials of which it is made, or when the percentage of crude fiber is above or the percentage of crude fat or crude protein below the standards adopted for concentrated commercial feeding stuffs. The State Chemist is further empowered to refuse to issue stamps or labels to any manufacturer, importer, dealer, agent or person who shall sell or offer or expose for sale any concentrated commercial feeding stuff in this State and refuse to submit the sworn statement required by section 4 of this act.

Sec. 10. It shall be the duty of every prosecuting attorney to whom the State Chemist shall report any violation of this act to cause proceedings to be commenced against the person or persons so violating the act, and the same prosecuted in the manner required by law.

Sec. 11. The term "concentrated commercial feeding stuff" as used in this act, shall include linseed meals, cocoanut meals, gluten feeds, gluten meals, germ feeds, corn feeds, maize feeds, dairy feeds, starch feeds, sugar feeds, dried brewers' grains, malt sprouts, dried distillers' grains, dried beet refuse, hominy feeds, cerealine feeds, rice meals, rice bran, rice polish, peanut meals, oat feeds, corn and oat feeds, corn bran, wheat bran, wheat middlings, wheat shorts and other mill by-products not excluded in this section, ground beef or fish scraps, dried blood, blood meals, bone meals, tankage, meat meals, slaughter house waste products, mixed feeds, clover meals, alfalfa meals and feeds, peavine meal, cotton seed meal, velvet bean meal, sucrose, mixed feeds and mixed meals made from seeds or grains and all materials of similar nature used for food for domestic animals, condimental feeds, poultry feeds, stock feeds, patented proprietary or trade and market stock and poultry feeds; but it shall not include straw, whole seeds, unmixed meals made directly from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat and broom corn, nor wheat flours or other flours.

Sec. 12. All laws and parts of laws in conflict with this act are hereby repealed.

Sections 2 and 5 as amended do not in any way change the fundamental requirements of the law as originally passed. It having been found that the revenue secured under the original law was more than was necessary to administer it the inspection fee was reduced 20 per cent. and the State Chemist authorized to issue tags covering 25, 50 and 100 pounds at proportionate rates. Tags for any feed are furnished only in amounts to the value of \$5.00 or multiples, and certificates cannot be registered unless accompanied by the minimum order for tags and fees.

MATERIALS COVERED BY THE LAW

Section 11 provides that the term concentrated commercial feeding stuff shall include all materials used as food for domestic animals except straw, whole seeds, the unmixed meals made *directly from the entire grains* of wheat, rye, oats, Indian corn, buckwheat and broom corn, wheat flours or other flours. All mill by-products, condimental feeds, poultry feeds, alfalfa meals, clover meals, etc., are specifically included.

In connection with the above, attention is called to the fact that in order to be entitled to exemption from registration and tagging the unmixed meal must be made directly from and contain all parts of the grain from which it is made, i.e. if the entire kernel of wheat is ground into meal it does not have to be registered and tagged, but if a portion of

the kernel is used to manufacture flour, and the separations such as bran, shorts, middlings, etc., are sold, the separated by-products must be registered and tagged when offered or exposed for sale or sold.

FEES

The inspection fee is based on the sale of 100 pounds or fraction and on sales of not less than 25 pounds amounts to 16 cents per ton. The law does not authorize the issuing of labels covering less than 25 pounds and where smaller amounts are sold a label good for 25 pounds must be used. The inspection tax is lower than that imposed by the majority of states having feeding stuff laws on the same basis.

THE LAW IN ITS RELATION TO MANUFACTURERS

The term manufacturer as used in the law is understood to mean the manufacturer, importer, dealer, agent or person responsible for the sale of the feed in Indiana who is permitted by Section 1 to file the certificate for registering feeding stuff for sale. The law requires of the person or persons desiring to register feeding stuff for sale:

First. The filing of a statement that he intends to offer feed for sale and an acknowledged certificate giving the name of the person or firm registering the feed, location of his principal office, name under which the feed will be offered for sale, the minimum percents. of crude fat and crude protein, and the maximum percent. of crude fiber it is guaranteed to contain, and a list of the materials used in its manufacture. Blank forms of statement and certificate will be furnished on request.

Second. Each certificate must be accompanied by an order for State Chemist's labels to the value of five dollars (\$5.00) or some multiple, which labels are good until used. These labels are printed to furnish all the information required by law, and fix the legal standard for any package of feed to which they are attached.

Under the present law 625 one hundred pound, 1250 fifty pound, or 2500 twenty-five pound labels are furnished for \$5.00. The minimum order for any feed may be divided into the three denominations, but the aggregate order must equal \$5.00 and not more than three divisions will be permitted for any feed.

After proper registration is made the following demand the attention of the person or firm making the registration:

First. That a State Chemist's label is attached to each package of 100 pounds or fraction of commercial feeding stuff sold or shipped into the state, or if feed is sold in bulk that sufficient labels accompany the shipment to cover similar quantities.

The State Chemist's label fixes the legal standard of composition and ingredients, contains all the information required by law and the private firm label or branding on sacks has no legal recognition in Indiana.

Section 6 provides that feed may be shipped in bulk without labels to recognized importers, manufacturers or manipulators who mix concentrated commercial feeding stuffs for sale. Shippers of feeding stuffs are requested to note that the person or persons desiring to take advantage of this provision must have become recognized as such importers, manufacturers or manipulators by registering feeding stuffs for sale under their own name and brand. No feeding stuff should be shipped to anyone

in this state without State Chemist's labels unless evidence is furnished that the before mentioned requirement has been complied with.

Second. That feeding stuff shipped into Indiana equals or exceeds the guarantee for crude fat and crude protein, is below the guarantee for crude fiber and contains the materials given on the State Chemist's labels which accompany it and which fix the legal guarantee for the shipment.

Third. That on or before January 31st of each year a sworn statement of the sales of the separate registered brands for the previous year is required.

Fourth. That penalties are provided for using the State Chemist's label the second time or making any alterations thereon. If it is desired to change the guarantee for any registered feed it can only be accomplished by submitting a new certificate and the minimum order for State Chemist's labels.

SAMPLE STATE CHEMIST'S LABEL.

\$50 fine for using this tag second time.

No. 9

..... Pounds.

JOHN DOE & CO.,
of LaFayette, Ind.,

Guarantee this

DOE'S MIXED FEED
to contain not less than

3.5 per cent. of crude fat,

14.0 per cent. of crude protein

and to be compounded from the
following ingredients:

Wheat Bran, Middlings, Screenings
and Corn Bran.

W. J. Jones, Jr.

State Chemist.

Purdue University Agricultural
Experiment Station, LaFayette, Ind.

Not good for more than **100** Pounds.

THE LAW IN ITS RELATION TO AGENTS AND DEALERS

Agents and dealers are requested to note that they are directly responsible for the concentrated commercial feeding stuffs which they offer for sale and where it is desired to shift this responsibility to the person or firm from whom the feed is purchased, *especially if the feed is purchased from firms not in this state*, it should be done by a special clause in the contract whereby the person or firm furnishing the feed agrees to assume all responsibility for any penalties assessed due to failure of feed furnished to meet the requirements of the Indiana Feeding Stuff Law. Our experience has been that reputable manufacturers are willing to assume responsibility for their products and when manufacturers are not

willing to do so the agent or dealer should give the preceding very careful consideration before offering any of their products for sale.

Feeding stuffs coming under the law should not be offered or exposed to sale without a State Chemist's label attached for each 100 pounds or fraction and where sales are made in bulk a State Chemist's label must accompany similar quantities. The same penalties are provided for offering or exposing to sale without a label as for selling.

Manufacturers, agents, dealers and others offering feeding stuff for sale should note carefully the rulings on pages 174-177 of this bulletin.

THE LAW IN ITS RELATION TO PRODUCERS AND CONSUMERS

1. The law contains no provision which prevents any farmer or consumer from mixing and having ground materials of his own production in any quantity and proportion he may desire, for his own use. If after grinding, such mixtures are offered or exposed for sale they must be registered and tagged. For example, a farmer or consumer may mix corn, oats, rye, barley and buckwheat and take it to a mill and have it ground, and such feed does not have to be tagged providing the feed returned to the consumer is made from the materials he took to the mill to have ground.

2. Any one in the State may purchase cereals separately, mix them in any proportion he desires and have them ground for pay for his own use without registering and tagging. When such materials are purchased already ground and mixed, or are offered or exposed for sale after mixing and grinding, a tag must be given the purchaser with each 100 pounds or fraction.

3. If a consumer takes wheat or other cereals to a mill and has it ground for pay or toll, receiving in return the by-products such as wheat bran, middlings, etc., from the cereals which he took to the mill, such by-products do not have to be tagged. If, however, the consumer takes his wheat or other cereals to the mill and receives in exchange so many pounds of wheat bran, middlings or other by-products from the *common bin*, such by-products *must be registered and tagged*.

4. **Clubs.** Where a number of consumers form a club and order a carload or other quantity of feed either from within or without the state such feed must be properly registered and have tags attached when delivered to the individual members of such club. The person ordering the feed or to whom the feed is consigned is responsible for such feed meeting the requirements of the Feeding Stuff Law.

From the preceding it will be seen that the Feeding Stuff Law contains no provision which interferes with the right of the consumer to have grain of his own production ground as he may desire, and there is nothing in the law which should in any way cause a discontinuation of the practice in some localities of farmers or millers grinding the grain raised by the consumer for the consumer's own use in such quantities and mixtures as he may desire. It should be remembered in this connection that in order not to come under the law the feed returned to the consumer must be from the grain or materials which he brought to the mill and not from that brought in by his neighbor. If the grinding is done for toll and the toll is offered for sale it must be properly registered and tagged.

If after the consumer has had his materials ground into feed he desires to offer some of it for sale, the portion so offered must be registered and tagged.

RULINGS UNDER THE LAW

The law provides that the State Chemist shall be empowered to prescribe and enforce such rules and regulations as he may deem necessary to carry into effect the full intent and meaning of the act. In accordance with this provision the following rulings will be enforced from the date of this bulletin:

1. **Stock and Poultry Foods or Feeds.** All materials sold under the name of Stock and Poultry Foods or Feeds are covered by the Indiana Feeding Stuff Law and must be registered and must bear the State Chemist's label when offered or exposed for sale or sold in this state.

2. **Condimental or Medicated Stock and Poultry Foods or Feeds.** In accordance with advice received from the Attorney General, this department defines a condimental or medicated food or feed to be any mixture having as a filler or diluent any material of feeding value such as wheat bran, middlings, screenings, oil meal, etc., or any of the materials used as adulterants for feeding stuffs such as corn cobs, oat hulls, peanut hulls, mill sweepings, etc., together with condiments and herbs or drugs, either or both, and rules that all such mixtures whether sold as Stock or Poultry Foods or Feeds, Conditioners, Relishes, Tonics, Powders, etc., are covered by the Indiana Feeding Stuff Law and must be registered and bear the State Chemist's label when offered or exposed for sale or sold in this state.

3. **By-products from Consumers' Grain.** When cereals are ground for pay or toll the by-products given in exchange will not have to be registered and labeled providing they are from the purchaser's own grain.

4. **By-products given in Exchange from Common Bin.** By-products given as exchange from the common bin must be registered and must bear the State Chemist's label when delivered to the consumer.

5. **Mixtures.** Mixtures of wheat bran and corn bran can not be registered as Wheat Bran but must be registered as Bran, Mixed Bran, Mixed Feed, or some name not misleading as to the materials used in their manufacture, and the ingredients given as wheat and corn bran.

6. **Feeds Containing Screenings.** Feeds containing screenings can not be registered as Wheat Bran, Wheat Middlings, Bran, Middlings, etc., but must be registered as Wheat Bran and Screenings, Bran and Screenings, Mixed Feed, or some name not indicating definite by-products and the ingredients given as wheat bran and wheat screenings, clover screenings or whatever the materials may be. In all feeds containing screenings the source of the screenings i. e. wheat screenings, oats screenings, clover screenings, etc., will be required. The general term grain screenings will not be accepted.

7. **Naming Ingredients.** The ingredients of a feed containing corn bran, screenings, sweepings and such materials cannot be covered by the term Wheat Product but must have each material used given as a separate ingredient. The term wheat product, corn product, etc., should not be used in the certificates to guarantee ingredients but the common names of the materials in the feed i.e. wheat bran, wheat middlings, corn bran, etc., should be given.

8. **Shipstuff.** The registration of a feed under the name of Shipstuff is restricted to those composed of mixtures of wheat bran and shorts, wheat bran and middlings, middlings and shorts or a mixture of the three. Shipstuff can only be used to cover feeds composed of wheat product.

9. **Wheat Screenings.** Wheat screenings if sold as such without grinding need not be registered. If ground they become a mixed meal and must be registered and tagged.

10. **Corn Cockle.** Corn cockle, ordinarily termed cockle, having been found poisonous when fed to cattle and poultry will be considered an adulteration if present in appreciable amounts in a feeding stuff offered or exposed for sale or sold in this state.

11. **Corn and Oat Feeds.** Registration of feeding stuffs under the name of Corn and Oats Chop, Corn and Oats Feed or similar terms will be restricted to those composed of the entire grains of corn and oats. Feeds containing other cereals or by-products such as corn bran, corn and cob meal, etc., may be registered under the name of Chop Feed or any name not misleading as to the nature of the materials used in their manufacture.

12. **Oat Feed.** This term will not be accepted when used to indicate any material other than whole or ground oats. Mixtures of oat shorts, oat middlings, oat bran or oat hulls will not be accepted under the term and the name of each separate material will be required.

13. **Flax Bran.** Careful investigation leads us to believe that the application of this term to mixtures of flax stems and pods or flax stems, pods and seeds tends to mislead the consumer and that its use should be restricted to materials composed of the bran layer of the flax seed.

In accordance with the preceding future registrations of mixtures of flax plant by-products will not be accepted under the name of *flax bran* but must be registered under the name of *flax plant offal* or *refuse* followed by a statement of the separate by-products composing same.

The term *flax bran* on labels issued in the future for registered feeding stuffs in which it appears will be followed by the explanatory phrase; "flax stems, pods and seeds."

14. **Seeds.** This term will not be accepted as an ingredient of a feeding stuff to cover a mixture of seeds. Where seeds are used the common name of each variety of seed used must be given in the certificate.

15. **Grits.** This term used as an ingredient of a feeding stuff will be understood to mean the small pieces of the hard, flinty portion of Indian corn obtained as a by-product in the manufacture of corn products. If used to cover products from any other cereal the name of the cereal from which it is obtained must precede the word *grits* in the certificate.

16. **Grit.** This term used as an ingredient of a feeding stuff will be understood to mean the rough, hard particles of limestone, quartz, mica, gravel, etc., used in poultry foods. It should be preceded on the certificate by the name of the material used i. e. limestone grit, quartz grit, mica grit, etc.

17. **Labels.** Two kinds of labels will be furnished, one a manila shipping tag suitable for attaching to bags, barrels, boxes, etc., and the other a gummed label for package goods. These tags or labels will be furnished in the three denominations provided for by law. The order for any feed may be divided into the three denominations providing the aggregate number ordered for each feed amounts in value to \$5 or some multiple of \$5. Not more than three divisions will be made for any feed and if tags and gummed labels are ordered for the same feed it will constitute one of the three divisions. Any net weight up to the amount for which the label is good will be printed in or the space left blank for filling in which the sale is made. In ordering manufacturers should state whether tags or gummed labels are desired, the denominations and whether the net weight is to be printed or left blank.

18. **Labels for Fractional Sales.** The Attorney General advises this department that a State Chemist's label must be furnished with each sale of 100 pounds or fraction and since the law does not authorize the issuing of labels for less than 25 pounds where a smaller amount is sold a label good for 25 pounds with the actual amount sold entered in the space for net weight must be used. All sales of one, two, five, eight and one-third and ten pounds must be accompanied by a State Chemist's label. Retailers of chicken feeds, condimental and medicated feeds and all other materials sold in less amounts than 25 pounds should give this ruling special attention.

19. **Transfer of Labels.** Since under the law labels are good until used a person or firm succeeding a firm who has registered feeding stuffs for sale may use any labels secured in the transfer *providing* a supplemental affidavit, (form for which will be furnished on request), is filed whereby the successors to the person or firm making the registration assume responsibility for feeds sold under such labels on and after the date of transfer. After labels secured in the transfer are exhausted the registration will be cancelled and no further labels issued without the submission of certificates by the new firm. In the use of labels secured by transfer no changes should be made on the label as furnished by this department. Penalties for altering State Chemist's labels are provided by the law.

20. **Redemption of State Chemist's Labels.** Since the law provides that State Chemist's labels shall be good until used no labels will be redeemed unless error on the part of this department can be shown.

21. **Clubs, Associations, etc.** When a number of consumers form a club or association and purchase feeding stuffs either from within or without the state such feeds must be registered and tagged when delivered to the individual members of the club. The person or persons ordering such feed or to whom it is consigned will be held responsible for failure of any such shipments to meet all the requirements of the Feeding Stuff Law.

22. **Changing Guarantees.** Guarantees either as regards composition or ingredients can only be changed by the submission of new certificates and the minimum label order for each feed.

23. **Reregistration.** Under the law the department, if it seems desirable, may hold that the registration of a feed is permanent and refuse reregistration unless a change is made in the name of the feeding stuff. While it is not deemed advisable to enforce such a ruling at present, manufacturers, importers, dealers, agents and persons who have registered feeding stuffs for sale are requested to note: That on and after June 1st, 1910, reregistration of a feeding stuff during the year without a change in name will not be permitted unless reasons satisfactory to this department are given for such reregistration. The substitution of inferior materials in a registered feeding stuff will not be considered as justifying reregistration without a change in name.

24. **Samples Equal to Guarantee.** On and after May 1st, 1910, inspection samples found equal to the guarantee in every particular will be reported to the manufacturer and to the person from whom sample is obtained as soon as the analysis of the sample is completed.

25. **Samples Not Meeting Guarantee.** Manufacturers will be given the usual ten days' notice on samples falling to meet guarantee but pending result of their investigation, dealers will be advised to withdraw such shipments from sale and will be held responsible for any violation which

may occur through failure to accept such advice. In cases of adulteration affidavits will be promptly filed. In cases of variation from guarantee for the first offense manufacturers will be advised to withdraw feed from sale or furnish State Chemist's labels showing a guarantee that can be maintained. Acceptance of this advice will not in any way be construed as affecting the right of this department to report such cases for prosecution under the provisions of the law.

26. Variations from Guarantee. It being a well established fact that materials used in the manufacture of feeding stuffs vary in composition with the season and other climatic and soil conditions, this department will not consider as indicating fraudulent intent, samples which in composition do not show a deficiency of more than five per cent. of the total guarantee in any ingredient guaranteed 20 per cent. or more, nor more than eight per cent. of the total guarantee in any ingredient guaranteed less than 20 per cent.: *Provided*, That no sample shall be deficient in more than one ingredient and that such deficiency shall not occur in a number of samples of the same feeding stuff.

27. Deficiency in More Than One Ingredient. Inspection samples showing deficiency in more than one ingredient will be reported as sold in violation of the law and dealers will be advised promptly to withdraw such shipments from sale.

28. Discarding or Substituting Samples. Requests are often received that for various reasons inspection samples be discarded or that new samples be substituted. All such requests must be refused and samples will only be discarded when error on the part of this department can be shown.

29. Prosecutions. In all cases where it is possible to do so either under the State law or through cooperation with the U. S. Department of Agriculture under the Federal Food and Drug Law, original shippers of feeding stuff will be prosecuted. *Local dealers*, however, are directly responsible under the law for the feeding stuff they offer for sale and will be held strictly accountable for failure of such feed to meet the requirements of the law. Dealers continuing on sale any feed after notification from this department that such feed does not meet the requirements of the law will be promptly reported for such violation.

CASES SETTLED UNDER THE FEEDING STUFF LAW

Since the enactment of the law to January 1st, 1910, the following violations have been adjusted:

For Delivering Feed Without State Chemist's Labels

Case Number ¹	Name of Violator	Address	Number Affidavits	Result
1	Anderson & Brown	Plainfield	1	Conviction
2	American Hominy Co.	Terre Haute	2	Conviction
3	Bristol Milling Co.	Bristol	1	Conviction
4	Gard, Geo. N.	Shererville	1	Conviction
5	Gosport Milling Co.	Gosport	1	Conviction
6	Indiana Milling Co.	Terre Haute	1	Conviction
7	Noble, John A.	Rolling Prairie	1	Conviction
8	Sawyer, John M. (Agent Great Western Cereal Co.)	Indianapolis	1	Conviction
9	Smith, Roper & Co.	Hobart	1	Conviction
10	Smock & Caca	Noblesville	1	Acquittal

Case No. 3 Bristol Milling Co., was first decided in favor of defendant but on appeal to the Supreme Court was decided in favor of the state and the retrial in the lower court resulted as stated above.

In a number of the preceding the defendants plead guilty and paid fines without bringing cases to trial.

11. On or about July 23, 1908, Charles Medland, Bass, purchased from J. E. Osborn, Knox, Ind., one bag of middlings which was labeled with State Chemist's label No. 1915 issued to the Model Milling Co., Tecumseh, Nebraska. No special examination of the feed was made by Medland until some of his hogs were taken sick, when the feed was found to contain broken glass, waste, pieces of wood, etc. The attention of this department was called to the matter August 12, and investigation by the inspector showed that the feed was originally purchased from C. V. Ferver, Knox, Ind., who stated that it was purchased direct from the company whose official label was attached. The original shipper being a non-resident and the condition of the sample being such that it was impossible to bring a case under the Federal Food and Drug Act, complaint was made to the prosecutor against C. V. Ferver. After careful consideration the prosecutor, W. J. Reed, advised that the case be settled by Mr. Ferver paying Mr. Medland damages for hogs lost due to character of the feed sold. By agreement between the prosecutor, Ferver, and Medland this was done.

In the above case it was evident that through the carelessness of some one at the mill a bag of sweepings was placed in the car since the remainder of the shipment contained no deleterious materials. Analysis of this sample will be found as number 1629, Table VII.

12. J. H. Williamson & Co., Muncie, Ind., sold and delivered to O. G. Smith, Farmland, 4½ tons alleged cotton seed meal which was shipped without tags. On inspection this shipment was found to be *cotton seed feed meal*, containing approximately 55% cotton seed hulls. Tags showing this to be the case were afterward furnished.

The evidence in this case was presented to the grand jury and an indictment returned. Owing to illness on part of the defendant the prosecutor advised that settlement be made and this was accordingly done by J. H. Williamson & Co., paying to O. G. Smith \$50 rebate due to difference in composition of material furnished and the cotton seed meal contracted for. The indictment was quashed by the prosecutor. Analysis of this sample will be found as number 2587, Table VII.

13. F. M. Jones & Co., Milton, sold to R. P. Lindsay one ton alleged cotton seed meal which was delivered without tags and on inspection was found to be cotton seed feed meal containing 50 to 55 per cent cotton seed hulls. Tags were afterward furnished.

Affidavit was filed but after full investigation of the facts the prosecutor, C. L. Ladd, advised that the case be settled by the payment of a rebate equal to the difference in value of the material delivered and cotton seed meal. By agreement between the prosecutor, R. P. Lindsay, and F. M. Jones & Co., the latter paid Lindsay \$9 rebate and the affidavit was not presented to the court.

In this case it was clearly shown that F. M. Jones & Co., did not recognize the difference between *cotton seed meal* and *cotton seed feed meal* and that the feed was ordered as an accommodation and delivered to Mr. Lindsay practically at cost.

Analysis of this sample will be found as number 2720, Table VII.

14. J. Lindsay Wells Co., Memphis, Tenn., contracted to deliver to F. A. Nave, Attica, Ind., 30 tons Star Brand Cotton Seed Meal No. 44 guaranteed in contract and advertising matter to contain 41-45 per cent. crude protein. The feed was shipped in plain bags *without State Chemist's labels attached* and a sight draft for \$822 attached to bill of lading. Microscopical and chemical analysis of a sample taken by our inspector showed the shipment to consist of *cotton seed feed meal* containing 53 per cent. cotton seed hulls. Under the rules of the Interstate Cotton Seed Pressers' Association, and the Memphis Exchange the shipment was not good delivery and if accepted entitled Mr. Nave to a rebate of \$12.08 per ton or a total of \$362.40 based on the difference in composition of material purchased and that furnished.

The feed having been sold direct, it was necessary to secure the cooperation of the U. S. Department of Agriculture and invoke the Federal Food & Drug Act which was accordingly done. Analysis by the U. S. Department of a sample secured by Federal Inspector Jenkins confirmed the results of this department and confiscation was ordered, the seizure being made by the U. S. Marshal on April 23, 1909.

In settlement the J. Lindsay Wells Co., repaid Mr. Nave the amount of sight draft less price of a small amount of the feed used by him, paid the costs of a suit started in the circuit court of Fountain county and the cost of transporting the feed from Attica to the Nave farm. In addition, the company plead guilty to violating the pure food law, paid a nominal fine, gave bond to the U. S. Government guaranteeing future compliance with the law and shipped the feed to Illinois as Cotton Seed Feed Meal. Analysis of this sample will be found as number 2822, Table VII. U. S. report of this case appears as Federal Food & Drug Act Judgment No. 109.

15. Steinhilber & Ross Milling Co., Hartford City, Ind., for selling under tag No. 1919, Wheat Bran guaranteed wheat product, a mixture of wheat and corn bran. The affidavit resulted in conviction. Analysis of sample will be found as number 4013, Table VIII.

16. The International Stock Food Co., Minneapolis, Minn., brought suit in the Federal Court, Indianapolis, for a temporary and permanent injunction to prevent this department enforcing the Feeding Stuff Law against its products, International Stock Food and International Poultry Food. Both cases were decided in favor of the State by His Honor, Judge Anderson and under date of March 20, 1909, Attorney General Bingham informed this department that said Court had held the Feeding Stuff Law constitutional so far as it was concerned and refused to prevent its enforcement against the International Stock Food Co.'s products. The company appealed from the decision to the United States Supreme Court where the appeal is now pending.

In addition to the cases given in detail, twelve affidavits have been filed for failure to use State Chemist's labels and are held by prosecutors pending observance of the law by those against whom violations are alleged.

In this connection it should be noted that the duty of this department is to furnish the affidavit and evidence to the prosecutor after which the case is in his charge and in the additional cases mentioned the judgment of the prosecutors has been that the best interests of the state would be served by withholding the affidavits pending good behavior.

¹ The number has no reference to date filed.

HOW THE LAW IS ADMINISTERED

The administration of the Feeding Stuff Law is under the same organization and is quite similar to the State Fertilizer Law and is enforced in much the same manner. Inspectors sent out from the State Chemist's office are on the road throughout the year, visiting all sections of the state, taking samples of the feeds offered for sale which samples are forwarded to the State Chemist's laboratory where they are subjected to microscopical and chemical analysis. In case the microscopical examination shows the presence of adulterants the manufacturer or dealer offering it for sale is at once advised to this effect and required to withdraw the feed from sale until State Chemist's labels showing the correct character of the ingredients are secured. If a second violation occurs the case is reported to the prosecutor of the district.

Inspection samples are analyzed in the order in which they are received at the laboratory. On the completion of the analysis a report is sent to the person or firm registering the feeding stuff for sale and to the agent, dealer or consumer from whom the sample was obtained.

In the case of samples showing adulteration or deficiencies, the manufacturer is given ten days in which to request a review of the work and a portion of the inspection sample before agents' or consumers' copy of report is forwarded.

Manufacturers' claims will be given every consideration and every effort will be made to secure concordant results but samples will not be referred for final settlement and only results which can be duplicated in the State Chemist's laboratory will be accepted as official.

The inspection will also include the weighing of packages of feed offered for sale to eliminate the practice of giving short weights which has been prevalent in some states.

Manufacturers are requested to note that we do not analyze samples for the purpose of furnishing the information necessary for making guarantees. Such analyses should be secured from a commercial chemist.

Consumers are requested to note that the only official inspections permissible under the law are of samples taken by the inspectors from this department. In case an inspection is desired do not send a sample but write to the State Chemist giving the official number and amount of feed on hand and if the amount is sufficient to furnish a fair sample, and repeated analyses have not been made of the brand, an inspector will be sent to take a sample without expense to the consumer. Shipments without tags other than to recognized manufacturers, importers or manipulators are contrary to law and no reports of samples taken from such illegal shipments will be made either to manufacturer, agent or consumer. In order to obtain the protection the law affords, refuse to accept any feed without State Chemist's labels.

Official Duties. The official business of the State Chemist is limited to the inspection of fertilizers, feeding stuffs and the settlement of disputes between coal oil inspectors and dealers. The amount of official work required prohibits the analysis of miscellaneous materials such as soils, rocks, water, etc., either gratis or for pay.

Information relating to fertilizers and feeding stuffs will be promptly furnished but the analysis of samples must be restricted to those taken by the State Chemist's inspectors.

OBJECTS OF THE LAW

First. To have all feeding stuffs offered or exposed for sale or sold in the state labeled so the consumer may have information as to their composition and the materials used in their manufacture.

Second. To protect the consumer against adulterated or inferior feeding stuffs, which up to the time of the passage of the law he had no means of recognizing.

Third. To protect the honest manufacturer and dealer against dishonest competition.

Fourth. To inform the consumer which feeding stuffs are the most economical to purchase and to promote the intelligent use of same.

RESULTS OF ENFORCEMENT OF THE FEEDING STUFF LAW

The inspection of the past two and one-half years gives ample evidence that the Feeding Stuff Law is accomplishing the purposes for which it was enacted.

The microscopical and chemical analysis of some 4185 samples shows that the use of the ordinary adulterants such as cob meal, oat hulls, corn bran, screenings, sweepings, cotton seed hulls, etc., has been practically eliminated and that the feeding stuffs offered for sale in this State are sold on their merits and for what they are and not as previously was many times the case through misrepresentation regarding the materials used in their manufacture.

Consumers are becoming educated to the desirability of investigating the feeding stuffs offered for sale and purchasing those which contain the feeding ingredients needed in the most desirable form and at the best price per unit rather than at the price per ton. In other words, they are beginning to purchase feeding stuffs on the basis of obtaining the feeding ingredients desired from the best sources which are generally if not always the most economical.

The sale of a large number of inferior feeding stuffs has been greatly decreased and in many cases such feeds have been entirely withdrawn from the Indiana markets with consequent benefit to the consumer and to the manufacturer of high class feeding stuffs.

RECEIPTS AND EXPENDITURES

The fees from the Feeding Stuff Control are sent to the State Chemist, who on the 25th day of each month transfers them together with those received from the Fertilizer Control to the Director of the Experiment Station for transmission to the Treasurer. All expenditures are made on voucher and duplicate receipt which are deposited annually with the Auditor of State.

In accordance with Section 5 an annual report of the receipts and expenditures from the fund is made to the Governor. The report for the fiscal year will be found on page 70, Twenty Second Annual Report of the Experiment Station, a copy of which has already been forwarded to all names on the mailing list. The report of the receipts and expenditures from the Feeding Stuff Control will appear annually in the report of the Station.

DEFINITION OF TERMS

Concentrated Feeding Stuff. A term used to distinguish feeding stuffs composed of grains, seeds or their by-products, and manufactured materials from the forage crops such as hay, straw, corn stover, etc., generally designated as Roughage.

Percentage Amount is the amount in 100. For example, if wheat bran is guaranteed to contain 4 per cent. of crude fat and 14 per cent. of crude protein every 100 pounds of it should contain 4 pounds of crude fat and 14 pounds of crude protein and a ton should contain 20 times these amounts.

Nutrient. That portion of a feeding stuff which may be utilized in producing energy and in building up the growth or repairing the natural waste in animal bodies.

Coefficients of Digestibility. A term used to designate that portion or per cent of the nutrients in a feed which are digested by an animal.

For example, if a feed contains 14.5 per cent. of protein and has a digestible coefficient of 80 the feed would contain 80×14.5 per cent. equal to 11.6 pounds of digestible protein in each 100 pounds. The coefficient of digestibility of different feeds varies with different kinds of animals and is determined by digestion experiments.

Coefficients of digestibility cannot be taken as absolute but closely approximate the amount of the various ingredients digested. The coefficients of digestibility as compiled by a number of authorities will be found in Table III.

Nutritive Ratio. A term used to designate the relation or ratio between the amount of digestible protein and the amounts of digestible carbohydrates + $2.4 \times$ the digestible fat present in a feeding stuff. The nutritive ratio of a feeding stuff is ascertained by dividing the amount of digestible carbohydrates + $2.4 \times$ the digestible fat by the amount of digestible protein. The amount of digestible fat is multiplied by 2.4^{*} to reduce it to the same energy basis as the carbohydrates, it being 2.4 times more valuable for the production of energy.

Example. To determine the nutritive ratio of wheat bran containing 2.7 per cent. digestible fat, 12.2 per cent. digestible protein and 39.2 per cent. digestible carbohydrates.

$2.7 \text{ fat} \times 2.4 = 6.48$ energy value of fat in terms of carbohydrates.

$6.48 + 39.2 = 45.68$ energy value of fat and carbohydrates.

$45.68 \div 12.2 = 3.7$

$1 : 3.7 =$ nutritive ratio of the wheat bran.

By using the preceding methods and the coefficients of digestibility Table III, the per cent. of digestible fat, digestible protein, digestible carbohydrates and nutritive ratio of any feeding stuff of known composition can be determined. By using the pounds of digestible nutrients in 100 pounds as given in Table I, the nutritive ratio of average samples may be ascertained.

Ration. A term used to designate the amount of food which should be consumed by an animal in 24 hours.

Balanced Ration. A term used to designate a ration so compounded as to furnish the ingredients needed for the nourishment of the animal

^{*}2.25 was and is still used by some authorities as the factor for this purpose.

in such form as to accomplish the purpose with the least possible waste. In preparing a balanced ration the character of the animal, its environment, the purpose for which it is desired and many other factors must be considered.

Standard Ration.² A term used to designate a ration so compounded as to contain the proportion and quantity of nutrients sufficient to satisfy the demands of a 1000 pound animal 24 hours without waste.

Recent investigations tend to show that in addition to the amounts of digestible protein, fat and carbohydrates which have heretofore been chiefly considered in the preparation of a balanced ration, more consideration and importance must be given to the mineral elements, ash, succulence of materials used, etc., and for this reason the balanced ration must be taken as a guide and not as an infallible rule to follow in the feeding of animals.

In the preparation of a suitable ration consideration of the mineral elements is especially important.

Filler. A term which has recently come into use to designate certain by-products generally of little feeding value which are used as diluents or to give bulk to concentrated materials in the preparation of compounded feeding stuffs. Among the common materials used as fillers are: oat hulls, cotton seed hulls, cob meal, oat clippings, grain screenings, flax bran (flax stems, pods and small flax seeds), etc. The majority of fillers contain relatively small amounts of crude fat and crude protein and large amounts of crude fiber.

Water. No matter how dry a feeding stuff may appear to be it always contains a considerable and varying quantity of water which can be driven off by heat. The amount of water present varies with the temperature, moisture content of the air, process of manufacture and the character of the substance.

Dry Matter. That portion of the feeding stuff which remains after the water is driven off.

Organic Matter. That portion of a feeding stuff which can be destroyed by a low heat. The dry matter minus the ash.

Ash. The inorganic or mineral matter of plants. The residue after burning until all the volatile material is driven off. It consists chiefly of the phosphates, sulfates, chlorides and carbonates of sodium, potassium, calcium and magnesium.

Crude Fat. That portion of a feeding stuff which is removed by extraction with dry ether. It is composed mainly of fats and oils, but contains in addition appreciable amounts of gums, wax and coloring matter which may be present in the material extracted.

Crude Protein. That portion of a feeding stuff containing nitrogen, and a term used in this bulletin to mean the total nitrogen present multiplied by 6¼.

Crude Fiber. That portion of a feeding stuff which goes to make up the cell walls and structural material. It is insoluble in dilute acid and alkali and is usually the most indigestible part of the feed.

Nitrogen Free Extract. That portion of a feeding stuff readily extracted by the action of water or dilute acid and composed of nonnitrogenous materials containing carbon, hydrogen and oxygen, the latter two usually in the proportion in which they are combined to form water.

²Furnished by Prof. W. W. Smith, Animal Husbandry Dept.

Sugars, starch, gums and dextrin are the principal constituents of the nitrogen free extract.

Carbohydrates. A term sometimes used interchangeably with nitrogen free extract but used by most analysts to designate all the materials classed under crude fiber and nitrogen free extract.

FUNCTIONS OF THE NUTRIENTS

Because of the part they play in building up new and restoring old tissues protein, fat, nitrogen free extract and ash are called nutrients. Each of them performs a certain function in promoting the growth and maintaining the animal body as follows:

Water, while not a nutrient in the sense in which the term is used in this report is essential to the maintenance of the animal body but as an abundant supply can always be obtained from other sources the amount of water in a feeding stuff has but slight effect on its feeding value. However, an excessive amount of moisture affects the keeping quality of the feed, causing fermentation and souring especially in hot weather, and also the food and money value because the more water present the less feeding ingredients per pound.

Ash or Mineral Matter furnishes the material for producing the bony structure and to some extent the various tissues and secretions of the body. As it is present in abundance in most feeding stuffs but little attention aside from consideration of its manurial value is usually given to it. However, owing to recent experiments tending to show its importance in animal nutrition more importance is being attached to the mineral matter than heretofore.

Protein is a term used to designate the compounds containing nitrogen in feeds and is the essential ingredient in the formation of flesh, ligaments, muscles, tendons, sinews, hair, hide and all portions of the body which have strength, including the bones, which contain from 20 to 25 per cent. of a nitrogenous substance. The protein bodies are the most important in the animal structure, composing the larger part of the animal machinery, furnishing the source of repair occasioned by the breaking down of the system and are the source of casein in milk and the basis of the blood. In addition to performing the special functions mentioned they can in the absence of sufficient fat and carbohydrates take their place and be used for the production of heat and energy. Their use for the latter purpose is not to be recommended as economical because as heat producers they are probably no better than carbohydrates, being 2.4 times less valuable for the purpose than fat. Common materials which contain relatively large amounts of protein are the albumen of egg, lean meat, gluten flour, curd of milk, gelatin, blood fibrin, etc.

Fat and Nitrogen Free Extract perform the same function in the body, being the heat and energy producers and keep the digestive tract in good condition. They are consumed in the body and give out heat and energy. For the purpose mentioned fats have 2.4 times the value of the nitrogen free extract.

Crude Fiber. While a necessary ingredient of every feeding stuff crude fiber has the least value and its principal use would seem to be to serve as a source of roughness and to furnish bulk thereby preventing caking of the feed during the process of assimilation and thus permitting more direct and complete action of the digestive juices.

A portion of the crude fiber of some feeding stuffs is digestible but the operation of digesting it consumes so much energy that a large portion of the value is taken up in the process of digestion. Hays, straws, fodders and other forms of roughage usually contain much fiber as do also cob meal, oat hulls, peanut hulls, rice hulls, cotton seed hulls, flax bran and other materials used as adulterants for feeding stuffs.

HOW TO BUY FEEDS

The crops ordinarily produced on Indiana farms such as corn, oats, rye, hay, etc., contain a relatively high percentage of carbohydrates and low percentages of fat and protein. As commercial feeding stuffs are generally purchased with a view to supplementing those of home production, feeds containing high percentages of fat and protein are usually desired and required to obtain the most profitable results.

With all classes of feeding stuffs high percentages of crude fat and crude protein indicate high feeding value while the presence of a high percentage of crude fiber indicates low feeding value. In view of the fact that protein is the most expensive ingredient to purchase, other things being equal, the percentage of crude protein, especially the digestible protein should determine the price of a feed, and of two feeds containing equal amounts of digestible fat and protein the one containing the smaller percentage of crude fiber is to be preferred.

While in the main the content of crude fat and crude protein can be taken as an index of the character of the feed the consumer should investigate the amount of the feeding ingredients which has been found to be digestible and base his final conclusions on the total amount of digestible ingredients. Just as in a fertilizer the value depends on the amount of available plant food present so in a feed the value is largely dependent on the amount of the nutrients present which the animal can readily digest.

As a guide in the selection of feeding stuffs the Indiana Feeding Stuff Law serves one of its most important functions. By consulting Table IX, consumers can ascertain the guaranteed composition and materials used in any feeding stuff registered for sale in Indiana and in this way may compare the feeding stuffs offered for sale by the various manufacturers. By the use of the coefficients of digestibility, Table III, the feed furnishing the most digestible ingredients for one dollar can easily be determined. By consulting Tables VII and VIII, the manner in which manufacturers are maintaining their guarantees can be readily ascertained.

As an example of the use of the tables in purchasing feeding stuffs the following taken from the results of the inspection is given. The average composition and selling price of cotton seed meal in this State for the year ending July 1, 1909, as shown by the analysis of inspection samples were 9.4 per cent. crude fat, 40.3 per cent. crude protein and \$29.59 per ton. For cotton seed feed meal, a mixture of cotton seed meal and 50 to 55 per cent. of cotton seed hulls, for the same period 5.3 per cent. crude fat, 19.4 per cent. crude protein and \$29.07 per ton. In the cotton seed meal consumers received approximately 6 pounds of digestible fat and 22.9 pounds digestible protein for each dollar expended while in the cotton seed feed meal they received 3.1 pounds of digestible fat and 8.3 pounds of digestible protein. Stated in another way the combined digestible fat and protein procured for one dollar in cotton seed feed meal was only 39.4 per cent. of that secured for the same amount

in cotton seed meal and the digestible protein in the former only 36.2 per cent. of that in the latter. It is readily seen from the preceding that if the feeding stuff was desired for its content of digestible fat and protein the cotton seed feed meal was only worth \$11.67 per ton based on the average selling price of cotton seed meal.

In connection with the preceding it should be noted that other ingredients, carbohydrates, ash and fiber are not considered.

The above is merely an example that serves to illustrate what may be shown in regard to other feeding stuffs offered for sale in Indiana. Cotton seed hulls, like the majority of materials used as filler, have but little value as a feeding stuff other than to furnish bulk and roughage and the Indiana consumer can very profitably take the time to consider whether materials for this purpose cannot be secured much more economically in the home grown crops.

The Indiana Feeding Stuff Law protects the consumer against deleterious materials and adulteration and furnishes him all the information necessary to enable him to learn the composition and materials used in the various feeding stuffs and then very properly leaves it to his judgment as to which feed he shall purchase.

The only legal standard for feeding stuffs offered for sale or sold in this state is the *State Chemist's* label, which under the law must accompany each sale of 100 pounds or fraction, and no feeding stuff should be accepted unless accompanied by such label, a reproduction of which is given on page 172. In purchasing feeding stuffs, insist on being furnished with State Chemist's labels and buy on the basis of the legal guarantee and inspection results without regard to branding on sacks or other statements. In this connection consumers should note that of the four cases of adulteration reported for prosecution three of the shipments were not accompanied by State Chemist's labels.

To furnish information regarding the average composition, digestibility, fertilizing value and weight of some of the more common feeding stuffs and materials used as adulterants Tables I, II, III and IV are given. The data for these tables were secured in the main from the following sources: Lindsay's compilations, Annual Reports Massachusetts Agricultural Experiment Station, 1896 and 1906, Henry's Feeds and Feeding, Jordan's Feeding of Farm Animals* and Voorhees' Forage Crops.* In compiling the tables, averages coming the nearest to feeding stuffs sold and the results obtained in Indiana have been used.

Table I is a revision of a similar table published in bulletin No. 131 of this Station.

The attention of feeders residing in close proximity to canning factories is called to the analysis of canning factory refuse in Table II, especially to that of pea vine silage which has been found an efficient, satisfactory and profitable material to use in a ration for fattening cattle.

*The Macmillan Co.

TABLE I.—Average Composition, Digestible Nutrients and Fertilizing Constituents of Some American Feeding Stuffs. Pounds per Hundred

FEEDING STUFF	AVERAGE COMPOSITION ¹						Total Dry Matter	DIGESTIBLE NUTRIENTS ²			FERTILIZING CONSTITUENTS		
	Water	Ash	Crude Protein	Crude Fat	Crude Fiber	Nitrogen Free Extract		Crude Protein	Crude Fat	Carbohydrates	Nitrogen	Potash ³	Phosphoric Acid ⁴
CONCENTRATES													
Corn	10.9	1.5	10.4	5.0	2.0	70.9	89.1	7.9	4.3	61.5	1.67	0.40	0.70
Corn meal	15.0	1.4	9.3	3.8	1.9	63.7	85.0	6.0	3.5	54.3	1.47	0.40	0.63
Corn bran	9.1	1.3	9.0	5.8	12.7	62.9	90.9	4.9	4.5	55.4	1.44	0.63	1.21
Hominy feed	11.1	2.5	9.8	8.8	3.8	64.5	88.9	6.4	7.6	60.0	1.57	0.49	0.98
Gluten feed	8.5	1.7	26.3	3.1	7.9	53.3	91.5	23.3	2.6	58.9	4.20	0.03	0.41
Gluten meal	9.5	1.0	38.0	2.3	2.1	49.1	90.5	31.7	2.1	44.8	5.78	0.05	0.34
Germ oil meal	9.0	2.7	22.7	10.4	9.3	45.9	91.0	16.6	10.0	43.0	3.63	0.50	0.80
Distillers' grains	8.0	1.7	31.7	12.1	12.3	34.3	92.0	33.1	11.5	39.4	5.12	0.17	0.60
Corn and cob meal	15.1	1.5	8.5	3.5	6.6	64.8	84.9	4.4	2.9	60.0	1.36	0.47	0.57
Cob meal	8.0	1.3	2.7	0.5	33.3	56.2	92.0	0.5	0.3	54.1	0.40	0.80	0.05
Oats	11.4	3.1	11.3	4.3	9.9	59.5	88.6	8.7	4.3	49.0	1.81	0.57	0.77
Oat shorts	7.7	3.7	16.0	7.1	6.1	50.4	93.3	12.5	2.8	46.9	2.56	0.53	0.91
Oat middlings	9.0	2.3	15.8	6.3	2.4	64.3	91.0	12.8	5.3	63.0	2.51	0.73	1.27
Oat feed	7.0	5.3	8.0	2.9	21.5	55.3	93.0	5.2	3.6	30.1	1.23	0.69	0.56
Oat hulls	7.3	6.7	3.3	1.0	29.7	59.1	92.7	1.3	0.6	41.0	0.54	0.52	0.34
Wheat	10.5	1.8	11.9	3.1	1.8	71.9	89.5	10.3	1.7	69.3	1.90	0.60	0.79
Wheat bran	11.9	5.8	15.4	4.0	9.0	53.9	88.1	11.9	2.5	41.8	2.47	1.61	2.39
Wheat middlings	12.1	3.3	15.6	4.0	4.6	60.4	87.9	12.0	3.5	48.5	2.50	0.93	0.95
Flour middlings	10.0	3.3	19.2	4.8	3.3	59.6	90.0	16.9	4.1	53.6	3.07		
Wheat shorts	11.3	4.6	14.9	4.5	7.4	59.3	88.3	12.2	3.3	50.0	2.33	0.59	1.25
Wheat screenings	11.6	9.9	12.5	3.0	4.9	65.1	88.4	9.3	2.3	51.0	2.00	0.84	1.17
Wheat chaff	11.1	6.5	4.3	1.4	29.2	67.1	88.9	2.6	4.6	24.6	0.69	0.53	0.95
Rye	11.6	1.9	10.6	1.7	1.7	72.5	88.4	9.9	1.1	67.6	1.70	0.54	0.89
Rye bran	11.6	3.6	14.7	2.8	3.5	63.8	88.4	11.5	2.0	50.3	2.35	1.40	2.23
Rye middlings	11.3	1.7	14.3	2.9	2.4	65.9	88.2				2.39	0.49	0.58
Rye shorts	9.3	5.9	18.0	2.3	5.1	59.9	90.7	11.9	1.6	45.1	2.38	0.81	1.23
Barley	10.9	2.4	12.4	1.8	2.7	69.3	89.1	8.7	1.6	65.6	1.99	0.43	0.79
Barley meal	11.9	2.6	10.5	2.3	6.5	65.3	88.1	7.4	2.0	62.9	1.68	0.34	0.68
Brewers' dried grains	8.5	3.8	25.7	7.0	13.6	41.4	91.5	20.8	6.3	30.3	4.11	1.55	1.23
Malt sprouts	10.3	5.7	23.9	1.7	10.7	48.5	89.3	13.6	1.7	37.1	3.71	0.93	1.43
Barley screenings	12.2	3.6	12.3	2.3	7.3	61.8	87.3						
Buckwheat	12.6	2.0	10.0	3.2	8.7	64.6	87.6	7.7	1.3	49.2	1.60	0.59	0.73
Buckwheat bran	10.5	3.0	12.4	3.3	31.9	33.3	89.5	7.4	1.9	30.4	1.93	1.23	1.73
Buckwheat middlings	10.0	4.7	26.7	7.3	6.3	44.6	90.0	22.7	6.4	32.2	4.27	1.14	2.19
Buckwheat shorts	11.1	5.1	27.1	7.6	8.3	40.8	88.9	21.1	5.5	32.5	4.34		
Buckwheat hulls	12.3	2.3	4.6	1.1	43.5	35.3	86.3	2.1	0.6	27.9	0.74	0.52	0.67
Flaxseed	9.3	4.3	23.6	33.7	7.1	23.2	90.8	20.6	22.9	17.1	3.61	1.06	1.39
Flaxseed meal	7.0	2.5	23.5	37.3	5.5	23.3	98.0	21.4	22.0	16.3	3.78	0.93	1.30
Linseed meal, old process	9.8	5.5	33.9	7.8	7.3	35.7	90.2	30.2	6.9	33.0	5.43	1.31	1.89
Linseed meal, new process	9.3	5.7	35.6	8.2	8.1	33.1	90.7	30.3	5.0	33.0	5.70	1.49	2.16
Flaxseed screenings	7.0	5.4	15.7	10.9	16.5	44.5	98.0				2.52		
Cotton seed	10.3	3.5	12.4	19.9	23.2	24.7	89.7	13.5	17.3	30.0	2.95	1.17	1.27
Cotton seed meal	8.2	7.3	42.3	13.1	5.6	23.6	91.3	35.5	13.4	21.8	6.77	1.79	2.63
Cotton seed hulls	11.1	2.8	4.9	2.2	46.3	33.4	88.9	2.5	1.7	33.1	0.67	1.03	0.35
Rice	12.4	0.4	7.4	0.4	0.3	79.3	87.6	4.3	0.3	72.3	1.18	0.09	0.13
Rice meal	11.0	3.3	11.3	12.9	5.3	50.3	89.0	7.3	11.7	43.1	1.39	1.50	3.70
Rice bran	11.0	12.7	6.3	6.1	20.6	42.3	89.0	4.4	4.4	37.7	1.09	0.34	0.39
Rice polish	10.0	6.7	11.7	7.3	6.3	58.0	90.0	7.7	5.4	55.3	1.33	0.71	3.07
Rice hulls	8.3	13.3	3.6	0.7	35.7	33.6	91.3	1.6	0.6	44.5	0.53	0.14	0.17
ROUGHAGE													
Corn fodder	42.3	2.7	4.5	1.6	14.3	34.7	57.3	2.0	1.1	34.3	0.73	0.39	0.54
Corn stover	40.5	3.4	3.3	1.1	19.7	31.5	59.5	1.4	0.7	31.2	0.61	0.40	0.39
Corn silage	79.1	1.4	1.7	0.8	6.0	11.0	50.9	0.9	0.7	11.7	0.23	0.37	0.11
Wheat straw	11.2	2.9	4.4	1.5	34.2	44.3	88.3	0.5	0.5	34.3	0.70	0.51	0.13
Oat straw	9.2	5.1	4.0	2.3	37.0	42.4	90.3	1.2	0.8	33.6	0.64	1.24	0.20
Barley straw	14.2	5.7	3.5	1.5	36.0	39.0	85.3	0.7	0.6	41.3	0.53	0.99	0.30
Buckwheat straw	9.9	5.5	5.2	1.3	43.0	35.1	90.1				1.04	1.14	0.13
Alfalfa hay	8.4	7.4	14.3	3.2	25.0	47.9	91.6	10.6	0.9	33.9	2.39	1.03	0.51
Timothy hay	12.3	4.4	5.9	3.5	29.0	45.0	86.3	2.3	1.3	42.4	0.94	0.90	0.53
Red clover hay	15.0	7.6	13.3	3.6	24.2	37.4	85.0	7.7	1.4	37.0	2.13	0.38	0.43
Alsike clover hay	15.0	9.7	14.0	3.1	23.1	36.1	85.0	9.3	0.8	35.4	2.24	2.23	0.67
Mammoth red clover hay	15.0	8.2	13.1	1.7	24.4	37.6	85.0				2.10	1.23	0.55

TABLE I.—Average Composition, Digestible Nutrients and Fertilizing Constituents of Some American Feeding Stuff. Pounds per Hundred (continued)

FEEDING STUFF	AVERAGE COMPOSITION ¹						Total Dry Matter	DIGESTIBLE NUTRIENTS ²			FERTILIZING CONSTITUENTS		
	Water	Ash	Crude Protein	Crude Fat	Crude Fiber	Nitrogen Free Extract		Crude Protein	Crude Fat	Carbohydrates	Nitrogen	Potash ³	Phosphoric Acid ³
MISCELLANEOUS													
Dried beet pulp -----	8.0	5.4	9.5	0.4	15.4	61.3	98.0	6.1	0.4	68.7	1.51	1.81	0.15
Molasses feed -----	8.0	6.5	14.4	2.6	10.6	57.9	98.0	9.1	2.3	51.8	2.21	0.24	0.30
Dried blood -----	11.0	3.1	84.3	0.4	-----	1.2	92.0	70.8	-----	-----	13.49	0.77	1.25
Meat scraps -----	10.7	4.1	71.3	13.7	-----	0.3	92.3	65.2	13.4	0.3	11.39	0.10	0.70

¹From Lindsay's compilation, Henry's Feeds and Feeding, Jordan's Feeding Farm Animals, Voorhees' Forage Crops.

²Calculated when possible from average composition and digestion coefficients. In other cases from Henry's Feeds and Feeding. Experiments with Ruminants.

³From same authorities as average composition but from analysis of other samples. In rice meal from S. C. bulletin 50.

⁴In calculating digestible nutrients per 100 pounds for flaxseed meal the digestible coefficients for flaxseed were used.

TABLE II.—Analysis of Miscellaneous Samples of Feeding Stuff made at Indiana State Chemist's Laboratory

FEEDING STUFF	Laboratory Number	Water per cent.	Crude Ash per cent.	Crude Protein per cent.	Crude Fat per cent.	Crude Fiber per cent.	Nitrogen Free Extract per cent.
CORN PRODUCTS							
Corn meal	28	5.8	1.4	8.3	4.8	2.1	77.6
Corn bran, high grade	A	9.5	2.2	9.8	6.2	7.5	64.8
Corn bran, low grade	O	8.0	1.5	5.9	1.7	20.7	68.2
Hominy meal	S1	8.0	2.3	10.1	6.9	3.3	69.4
Hominy feed	C3103	6.5	2.1	10.1	8.0	3.9	69.4
Hominy feed	S109	9.3	2.9	10.9	9.6	5.4	61.9
Hominy hearts	V	8.5	6.2	13.6	21.8	5.4	44.5
Gluten feed	S21	9.0	4.7	24.7	2.7	8.0	50.9
Gluten feed (coarse)	S64	7.5	3.7	27.3	1.9	8.4	51.3
Gluten feed (fine)	S65	6.7	2.9	27.7	2.6	8.5	51.6
Germ oil meal	S33	9.2	1.9	21.8	13.1	9.6	45.9
Distillers' grains (dried)	S49	11.0	1.5	24.4	10.5	8.6	44.0
Corn and cob meal	S43	8.5	1.4	8.6	3.5	5.2	73.3
Corn screenings	C	9.6	4.0	9.5	3.5	7.4	65.0
Cob meal	70	6.8	1.7	2.9	0.4	31.2	57.7
Cob chaff	X11	7.6	6.8	7.7	2.2	16.9	53.6
Corn silks	X13	8.3	4.0	15.4	1.1	17.0	54.2
Corn husks, silks, and cob chaff	S109	7.7	5.2	9.6	1.2	15.9	60.4
Corn cob tips, silks, etc.	S110	12.2	13.3	8.0	2.5	2.3	61.2
Corn and oat chop (56 to 82 lbs.)	69	6.7	2.3	8.2	3.9	3.8	75.1
OAT PRODUCTS							
Oat meal	S63	6.7	1.9	13.9	6.4	1.5	69.3
Oats No. 2	S104	9.9	3.3	11.6	5.1	9.7	59.9
Oats No. 3	S106	10.6	4.5	11.0	4.7	10.7	58.5
Untreated oats	S113	9.0	3.1	11.4	5.1	10.7	60.7
Purified oats (sulphured)	S112	9.0	3.2	11.1	5.2	11.1	60.4
Oats (okey)	S99	9.8	2.9	13.4	5.3	7.3	61.3
Oat middlings	S46	7.2	2.1	14.5	6.6	2.9	65.7
Oat bran	S108	6.0	5.4	11.7	5.2	15.5	56.1
Oat hulls	S45	7.0	5.6	1.9	0.6	33.2	51.7
Oat hulls	X17	8.8	7.3	3.7	1.3	30.3	43.6

TABLE II.—Analysis of Miscellaneous Samples of Feeding Stuff made at Indiana State Chemist's Laboratory (continued)

FEEDING STUFF		Laboratory Number	Water per cent.	Crude Ash per cent.	Crude Protein per cent.	Crude Fat per cent.	Crude Fiber per cent.	Nitrogen Free Extract per cent.
Oat clippings		148	11.0	14.7	12.8	3.1	18.6	39.8
Oat screenings	{ Chaff and weed seeds 31.80% Dust, grit, fine chaff 68.11%	S111	9.1	37.0	13.1	2.3	9.8	28.7
Oat chaff and dust (oat dust 68.50%)		S107	7.9	20.9	12.6	2.2	17.6	37.8
Oat chaff		X1	7.0	15.5	6.5	2.7	22.6	45.7
WHEAT PRODUCTS								
Red wheat		23	8.5	2.0	11.1	2.0	2.3	74.1
White wheat		24	9.7	2.0	10.8	1.8	2.3	70.4
Wheat before scouring		X18	11.4	1.7	14.0	1.9	2.2	68.8
Wheat after scouring		X19	11.7	1.8	14.3	1.9	2.4	67.9
Clear flour		K	8.7	0.6	9.8	1.4	0.3	79.2
Patent flour		L	8.6	0.6	8.8	1.0	0.8	80.8
Low grade flour		M	7.5	1.0	10.1	1.7	0.8	79.4
Red dog flour		S68	9.5	3.3	17.7	4.8	3.1	61.6
Wheat bran		F	10.0	5.9	16.2	3.6	3.2	56.1
Wheat bran		I	8.5	5.8	16.7	4.2	3.3	55.5
Wheat bran		W	9.4	6.9	15.4	4.4	10.3	53.6
Wheat bran		S34	9.0	5.8	15.4	5.3	7.1	57.4
Bees wings (from purifier)		S98	10.7	1.4	5.8	0.8	17.8	69.5
Bees wings (from sifter)		S94	11.3	2.6	9.5	1.7	14.4	60.5
Wheat middlings		G	10.2	3.8	16.0	4.7	4.3	61.5
Wheat middlings		H	10.5	4.5	16.5	4.4	7.0	57.1
Wheat middlings		J	8.2	3.7	18.6	4.9	4.3	60.3
Wheat middlings		S2	9.0	5.3	17.0	5.3	3.1	55.4
Wheat middlings		S35	9.8	3.8	15.6	5.1	4.4	61.3
White middlings		S28	10.4	0.4	10.5	1.4	0.7	76.6
White middlings (containing germ)		S97	10.6	1.0	16.1	3.0	1.0	69.3
Flour middlings		S59	9.7	3.9	17.1	5.0	5.4	58.9
Wheat screenings (Ind.)	{ Light wheat 96.72%							
(high grade)	{ Weed seeds 1.23%	S26	9.9	3.3	11.9	2.3	3.5	64.1
Wheat screenings (Ind.)	{ Light wheat 88.90%							
(low grade)	{ Cheat, cockle Weed seeds 11.04%	S27	11.5	3.2	12.0	2.4	6.8	64.1
Wheat screenings (Ind.)	{ Light wheat 43.14%							
(low grade)	{ Cheat 34.65% Stems, chaff and weed seeds 22.17%	S30	9.0	3.6	13.2	2.2	9.1	63.7
Wheat screenings, Ind.		S99	11.0	3.6	15.1	2.5	4.9	63.0
Wheat screenings, Wis.		X16	9.6	9.8	13.4	2.8	7.7	63.7
Wheat scourings		B	9.5	15.9	18.7	1.8	10.4	45.4
Wheat scourings		S65	10.7	3.1	14.8	3.8	10.0	57.0
Wheat scourings		X30	9.1	4.3	12.9	2.4	19.4	51.9
RYE PRODUCTS								
Rye		U	12.6	1.8	10.5	1.7	2.2	71.2
Rye bran		S50	10.7	2.5	14.7	3.7	3.6	64.3
Rye middlings		S33	8.6	3.7	15.8	3.0	5.0	63.9
Rye chop		N	8.3	1.9	10.5	1.9	2.1	75.3
BARLEY PRODUCTS								
Barley		S69	10.3	2.5	12.1	2.1	5.0	68.0
Barley		S90	11.3	2.3	10.9	1.7	5.3	69.5
Barley meal		S91	9.6	4.1	11.5	2.9	10.2	61.7
Barley flour		S102	10.3	1.0	8.8	1.2	0.8	78.0
Barley shorts		S101	10.2	3.5	12.2	3.4	10.2	60.5
Malt sprouts		80	8.4	5.7	24.4	1.6	15.5	44.4
Brewers' grains (dried)		S53	8.5	3.9	23.4	5.9	13.7	39.6
Barley screenings	{ Oats 20.42% Barley 45.60% Weed seeds 33.88%	S100	10.1	6.4	10.4	2.8	14.9	55.4

*Scourings from wheat sample No. X18.

TABLE II.—Analysis of Miscellaneous Samples of Feeding Stuff made at Indiana State Chemist's Laboratory (continued)

FEEDING STUFF	Laboratory Number	Water per cent.	Crude Ash per cent.	Crude Protein per cent.	Crude Fat per cent.	Crude Fiber per cent.	Nitrogen Free Extract per cent.		
BUCKWHEAT PRODUCTS									
Buckwheat	S23	8.8	1.9	11.4	3.0	10.4	64.5		
Buckwheat flour	74	8.0	1.7	13.0	2.9	1.6	79.3		
Buckwheat bran	54	6.0	2.6	11.7	2.1	42.0	36.6		
Buckwheat middlings	Z	9.9	6.3	37.9	7.7	9.4	33.3		
Buckwheat hulls	X	10.1	2.4	4.9	1.0	43.1	33.5		
FLAX PRODUCTS									
Flax seed	S19	3.7	3.4	33.3	37.4	5.5	23.7		
Flax seed meal	S20	6.7	3.2	23.1	40.4	5.1	31.5		
Linseed oil cake	S23	7.7	5.3	33.8	7.0	3.6	37.7		
Linseed meal (old process)	S18	7.7	5.2	31.5	11.1	9.5	24.9		
Linseed meal (old process)	S24	9.2	5.5	33.4	7.6	3.3	35.5		
Linseed meal (new process)	S17	8.6	6.3	34.4	3.3	9.3	33.1		
Flax bran	X9	7.0	5.0	17.3	2.9	34.7	33.1		
{ Meal 23%	X2	7.2	6.3	29.4	5.0	15.0	37.1		
{ Bran 32%	X3	7.3	4.4	19.1	3.5	30.9	24.3		
{ Stems 45%	X4	6.6	2.3	4.7	1.6	55.9	23.4		
Flax bran	X9	7.4	5.7	6.0	4.3	41.3	34.9		
{ Pods 59.96%	X5	7.5	6.7	7.2	5.3	35.5	37.3		
{ Stems 40.06%	X6	7.2	3.4	3.5	2.5	54.9	33.5		
Flax seed screenings	{ Broken flax 16.97%		S23	9.9	7.6	15.3	12.7	15.5	39.0
	{ Flax stems 24.23								
	{ Weed seeds 48.73								
Flax seed screenings meal	S25	9.7	6.4	14.5	13.7	13.5	44.3		
COTTON SEED PRODUCTS									
Cotton seed	S11	7.0	4.0	20.8	20.4	21.3	26.5		
Cotton seed cake	75	5.3	5.5	41.8	7.9	3.6	30.9		
Cotton seed meal (high grade)	S40	7.9	6.0	44.2	10.3	4.1	37.6		
Cotton seed meal (medium)	S39	10.0	5.6	37.4	6.9	10.7	29.4		
Cotton seed meal (low grade)	S41	7.7	4.5	25.9	6.1	17.7	33.1		
Cotton seed meats	S106	9.1	5.3	39.9	33.1	4.1	13.5		
Cold pressed cotton seed cake	149	3.4	4.3	24.3	3.3	24.1	29.6		
Cotton seed feed meal	S49	3.4	4.3	20.7	5.3	22.0	39.5		
Cotton seed feed meal	S43	7.3	4.3	21.1	5.0	23.7	33.7		
Cotton seed hulls	S38	3.5	2.3	3.7	1.5	44.5	39.5		
RICE PRODUCTS									
Rough Rice	S67	11.3	4.9	6.0	1.7	3.7	67.4		
Rice (bran removing process)	S69	11.9	1.1	3.6	1.6	0.3	76.0		
Rice (separated from bran)	S70	13.4	1.6	3.4	1.2	0.9	74.5		
Rice (brewers)	S71	10.9	0.6	7.3	0.7	0.5	30.0		
Rice (screened)	S72	11.6	0.8	7.5	0.6	0.5	79.0		
Rice (pearling process)	S73	11.9	0.5	3.0	0.6	0.3	73.7		
Rice (finished product)	S74	11.7	0.6	7.1	0.4	0.4	79.3		
Carolina rice meal	T	7.0	3.7	13.3	10.7	9.9	50.3		
Rice meal	Q	9.5	9.9	11.6	9.7	9.3	49.4		
Rice bran	35	6.4	19.3	3.4	1.0	39.1	30.3		
Rice polish	S	3.0	3.6	12.4	6.3	3.3	63.9		
Rice polish	S37	10.4	3.2	12.6	7.6	1.3	59.4		
Rice hulls	R	9.7	13.2	2.1	0.5	33.7	30.3		
Rice hulls	S35	10.6	16.6	3.2	0.6	39.6	39.4		
ANIMAL MEALS									
Beef scraps	S12	6.6	4.7	61.7	17.3	---	9.3		
Blood meal	S10	7.3	3.3	33.7	0.6	---	4.1		
Blood and bone	S6	5.7	33.4	40.0	3.5	---	6.4		
Feeding tankage	S5	3.0	27.4	40.9	14.4	---	14.3		
Meat meal	S4	11.2	5.3	61.7	15.3	---	5.5		
Meat meal (fine)	93	6.1	6.0	60.3	16.0	---	11.1		
Poultry bone (coarse)	S9	7.9	64.4	25.4	1.7	---	0.6		

TABLE II.—Analysis of Miscellaneous Samples of Feeding Stuff made at Indiana State Chemist's Laboratory. (continued)

FEEDING STUFF							Laboratory Number	Water per cent.	Crude Ash per cent.	Crude Protein per cent.	Crude Fat per cent.	Crude Fiber per cent.	Nitrogen Free Extract per cent.
Poultry bone (medium).....						S8	6.8	59.8	24.8	3.1	---	5.5	
Poultry bone (fine).....						S7	6.3	64.1	23.6	2.1	---	8.9	
ALFALFA PRODUCTS													
Alfalfa meal						S8	9.7	8.6	14.9	1.9	23.2	35.7	
CLOVER PRODUCTS													
Clover seed						S65	8.3	3.8	35.3	8.1	9.8	33.7	
Clover meal						S61	8.9	9.2	15.4	1.5	24.7	40.8	
Clover seed screenings } Small clover seed 90.54%													
(high grade) Plantain, timothy, weed seeds 9.40%..					S86	9.4	4.7	34.5	7.0	11.3	33.3		
Clover seed screenings } Small clover seed 48.40%..													
(low grade) Plantain, timothy, weed seeds 51.58%..					S87	9.9	7.8	23.1	5.9	12.6	34.7		
Clover seed screenings meal					X22	11.4	6.1	30.9	4.8	12.8	34.0		
MISCELLANEOUS													
Dried beet pulp						S44	8.9	3.0	9.5	0.6	18.4	59.6	
Molasses feed						94	6.1	6.2	20.1	2.7	10.5	53.4	
Molasses grains						96	6.9	9.0	18.0	3.8	9.8	53.5	
Hog meal (gluten feed, bone and charcoal)						143	5.9	11.1	21.3	9.4	12.3	40.0	
Canadian field peas					S16	10.4	2.5	24.4	1.4	4.9	56.4		
Cocoanut oil cake					S76	7.5	4.5	21.4	10.2	15.0	40.4		
Cocoanut meal					S75	6.3	4.7	20.8	9.9	14.6	43.8		
Cow peas					S63	10.3	3.7	23.4	1.4	5.0	56.3		
English peas					S79	9.5	3.7	23.5	1.7	5.8	50.3		
English pea meal (malting)					S80	4.8	2.7	27.4	2.4	7.7	54.0		
Field beans					S81	10.6	3.7	21.5	1.2	4.5	53.5		
Field bean meal (malting)					S82	4.1	3.2	22.6	2.1	3.6	64.4		
German millet seed					21	6.9	8.0	10.3	4.3	9.5	65.0		
Italian millet seed					22	6.5	6.3	10.3	3.9	9.4	63.6		
Hemp seed					S15	6.9	5.4	24.6	31.7	12.5	13.9		
Kaffir corn					S14	11.8	1.5	10.7	3.3	1.9	70.3		
Locust bean					S77	7.5	2.5	3.9	0.4	5.9	79.9		
Locust bean meal					S78	8.3	2.9	6.1	0.8	6.6	76.3		
Milo maize					S61	11.4	3.3	11.9	3.4	9.5	60.6		
Rape seed					S54	5.6	3.9	19.1	43.0	6.3	17.3		
Soya beans					11	4.3	4.3	42.1	19.4	4.1	25.3		
Sunflower seed					S30	5.6	2.9	15.4	23.4	23.7	19.0		
Dried peat					X7	8.8	23.3	17.5	7.0	6.4	23.3		
Corn cockle					X21	8.7	4.0	14.6	6.2	5.4	61.1		
Grain and seed screenings... { Wheat, corn, oats, barley, kaffir corn, flaxseed, sunflower seed, 40% weed seeds.					C4749	7.1	21.1	11.3	4.4	9.3	46.9		
Weed seeds					E	10.0	4.3	13.3	7.0	11.6	53.9		
Peanut hulls						6.6	2.1	5.5	1.9	70.9	12.7		

CANNING FACTORY REFUSE

	Laboratory Number	Water per cent.	Crude Ash per cent.	Crude Protein per cent.	Crude Fat per cent.	Crude Fiber per cent.	Nitrogen Free Extract per cent.	Nitrogen, N, per cent.	Potash, K ₂ O, per cent.	Phosphoric Acid, P ₂ O ₅ , per cent.
Pea vine silage.....	3114a	77.7	2.6	3.6	0.8	6.6	3.7	0.57	0.37	0.10
Pea vine silage from middle of stack.....	1187y	67.4	2.7	3.3	0.8	5.9	17.1	0.61	0.33	0.23
Pea vine silage from top of stack.....	1147y	80.5	10.6	3.2	0.1	2.0	4.6	0.34	0.09	0.45
Pea vine silage from bottom of stack rotted	1157y	32.9	18.7	17.4	0.3	12.4	18.4	3.73	2.37	1.57
Pea vine hay.....	3126a	7.1	6.8	9.8	1.7	39.3	52.3	1.53	1.43	0.33
Sweet corn silage.....	3115a	51.6	1.0	1.5	0.3	5.7	9.9	0.94	0.39	0.19
Sweet corn cobs.....	3129a	74.6	0.6	2.0	1.3	5.5	16.0	0.33	0.15	0.13
Sweet corn cobs.....	3129a	79.1	0.7	3.6	0.6	5.3	11.9	0.39	0.23	0.16
Sweet corn husks.....	3130a	32.3	0.5	1.3	0.3	4.8	10.9	0.19	0.13	0.06

ROUGHAGE

Sweet clover	8197a	7.6	6.5	15.0	1.9	20.4	40.3	2.40	1.36	0.84
Wild worm wood	8198a	8.5	6.7	7.9	1.5	87.9	87.5	1.20	2.79	0.48

TABLE III.—Average Coefficients of Digestibility of Feeding Stuffs¹

FEEDING STUFF.	Per cent.			
	Crude Protein	Crude Fat	Crude Fiber	Nitrogen Free Extract
CONCENTRATES				
Corn	76	86	58	86
Corn meal	66	91	—	92
Corn bran	54	77	59	77
Hominy feed	65	98	67	89
Gluten feed	85	88	78	89
Gluten meal	78	99	—	88
Germ oil meal	88	98	—	78
Distillers' grains ²	78	95	95	81
Corn and cob meal	69	84	45	88
Cob meal	17	50	65	60
Oats	77	89	81	77
Oat middlings	81	94	49	96
Oat feed	65	90	39	49
Wheat bran	77	68	30	71
Wheat middlings	77	88	30	78
Flour middlings	89	86	36	88
Wheat chaff ³	6	34	87	29
Barley ⁴	70	89	50	98
Brewers' dried grains	81	89	49	67
Malt sprouts	80	100	24	69
Buckwheat middlings	85	89	17	88
Flaxseed	91	85	61	55
Linseed meal, old process	89	89	57	78
Linseed meal, new process	85	98	74	84
Cotton seed	68	87	76	50
Cotton seed meal	84	95	44	89
Cotton seed meal and hulls (feed meal)	68	85	46	54
Cotton seed hulls	6	79	47	34
Rice meal	68	91	—	98
Rice bran	64	78	81	78
Rice polish	65	74	29	98
ROUGHAGE				
Corn fodder	45	70	68	78
Corn stover	36	67	64	59
Corn silage	50	89	64	71
Wheat straw	11	31	59	28
Oat straw	30	33	54	44
Barley straw	30	49	56	54
Alfalfa hay	74	39	43	66
Timothy hay	48	50	50	69
Red Clover hay	58	55	54	64
Alsike clover hay	68	38	50	65
MISCELLANEOUS				
Dried beet pulp	64	—	84	81
Molasses feed	68	88	58	89
Dried blood	84	—	—	—
Meat scraps	98	98	—	—

¹Experiments with Ruminants, Lindsay's compilation. Reports Mass. Agri. Exp. Station.²Henry's Feeds and Feeding.³Principally corn.⁴In calculating digestible carbohydrates for Table I coefficient for gluten feed was used.⁵German experiments give digestion coefficient as 26 which was used in calculating digestible carbohydrates Table I.

TABLE IV.—Average Weight of One Quart of Feeding Stuffs and Adulterants Analyzed for Table II¹

FEEDING STUFF.	Weight Pounds	FEEDING STUFF.	Weight Pounds
Corn (unground)	1.75	Flaxseed screenings meal.....	1.23
Corn meal	1.31	Cotton seed (unground).....	0.73
Corn bran (high grade).....	0.75	Cotton seed cake	1.07
Corn bran (low grade).....	0.46	Cotton seed meal (high grade).....	1.75
Hominy feed	1.50	Cotton seed meal (medium).....	1.50
Gluten feed	1.50	Cotton seed meal (low grade).....	1.55
Gluten meal	1.65	Cotton seed meats	1.23
Germ oil meal	1.25	Cotton seed meal and hulls (feed meal)	1.69
Distillers' dried grains.....	0.63	Cold pressed cotton seed cake.....	1.08
Kaffir corn	2.00	Cotton seed hulls	0.84
Corn and cob meal	1.50	Rice bran	0.98
Corn screenings	1.00	Rice hulls (ground).....	1.00
Cob meal	0.98	Beef scraps	1.49
Oats (unground)	1.08	Blood meal	1.87
Oat meal	1.67	Feeding tankage	1.24
Oat bran	0.71	Meat meal	1.44
Oat hulls	0.41	Blood and bone.....	1.83
Oat clippings	0.39	Alfalfa meal	0.59
Oat screenings	1.07	Clover seed	1.24
Oat chaff	0.30	Clover meal	0.66
Wheat, whole	1.90	Clover seed screenings (high grade).....	1.70
Wheat bran	0.55	Clover seed screenings (low grade).....	1.54
Wheat middlings	1.00	Clover seed screenings meal.....	1.40
White middlings	1.16	Dried beet pulp	0.65
Flour middlings	1.12	Molasses feed (dry).....	0.80
Wheat screenings, Indiana	1.03	Canadian field peas.....	2.09
Wheat scorings	0.69	Cocoanut oil cake	1.31
Rye (unground)	1.85	Cocoanut meal	1.46
Rye bran	0.76	Cow peas	1.70
Rye middlings	1.65	English peas	1.66
Barley (unground)	1.01	English pea meal (malted).....	1.90
Barley flour	1.17	Field beans	1.71
Malt sprouts	0.53	Field bean meal (malted).....	1.46
Brewers' dried grains.....	0.67	German millet seed	1.59
Barley screenings	1.16	Italian millet seed	1.74
Buckwheat (unground)	1.43	Hemp seed	1.37
Buckwheat flour	1.59	Locust bean meal	1.45
Buckwheat bran (mixture hulls and middlings)	0.55	Milo maize	1.33
Buckwheat middlings	0.92	Rape seed	1.59
Buckwheat hulls	0.50	Sofa beans	1.31
Flaxseed (unground)	1.05	Sunflower seed	1.51
Flaxseed meal	1.10	Dried peat	1.25
Oil cake	1.51	Grain and seed screenings	1.33
Linseed meal, old process.....	1.33	Weed seeds	1.30
Linseed meal, new process.....	1.30	Peanut hulls	0.87
Flax bran, (stems, pods, seeds).....	0.79	Grit (ground limestone).....	3.58
Flaxseed screenings	1.13	Grit (oyster shells)	2.50

¹This table was prepared by carefully weighing a quart of the feeding stuffs a number of times and averaging the results.

ADULTERATION OF FEEDING STUFFS

The high prices for feeding stuffs which have prevailed for the past two years have been a temptation to unscrupulous manufacturers and dealers to add materials of less value than the pure products, and undoubtedly it is chiefly due to the rigid inspection made possible by the Feeding Stuff Law that the feeding stuffs sold in Indiana since its passage have been remarkably free from adulterants. Chief among the materials used for the purpose of adulteration are cob meal, oat hulls, oat clippings,

rice hulls, cotton seed hulls, buckwheat hulls, grain screenings, corn bran, flax bran, (stems, pods and small flax grains), wheat screenings, etc. Of these, corn bran, grain screenings, wheat screenings and flax bran have a feeding value but not so high as the materials such as wheat bran, middlings, shorts, shipstuff, corn and oats chop, cotton seed meal, linseed meal, alfalfa meal, etc., to which they are added.

Corn cockle is usually present in greater or less amount in the cereal by-products, it being very difficult to separate it entirely from the cereals. A large amount of it is liable to be present in grain screenings and owing to its supposed poisonous effect on poultry and cattle it is considered an adulterant by the majority of Feeding Stuff Control officials if present in appreciable quantities, although its use for that purpose is generally due not to its direct addition to the feeding stuff but to its presence in screenings.

The average composition and digestibility of most of the materials used as adulterants are given in Table I and the following contains the analysis of some samples obtained in Indiana:

TABLE V.—Composition of Some Materials Used as Adulterants.
Pounds per Hundred

MATERIAL	Water	Crude Ash	Crude Protein	Crude Fat	Crude Fiber	Nitrogen Free Extract
Corn Bran	9.5	2.9	9.8	6.2	7.5	64.8
Corn Bran	8.0	1.5	5.9	1.7	20.7	68.2
Corn Screenings	9.6	4.0	9.5	3.5	7.4	66.0
Corn Screenings	13.8	1.9	8.6	2.7	8.6	64.4
Cob Meal	6.8	1.7	2.2	0.4	81.2	87.7
Cob Chaff	7.6	6.8	7.7	2.2	16.9	58.6
Oat Chaff	7.0	15.5	6.5	2.7	22.6	45.7
Oat Chaff and Dust	7.9	20.9	12.6	3.9	17.6	37.8
Oat Clippings	11.0	14.7	12.8	3.1	18.6	39.8
Oat Hulls	6.0	5.8	2.8	0.6	33.3	58.0
Oat Hulls	7.0	5.6	1.9	0.6	33.2	51.7
Oat Hulls	8.8	7.8	3.7	1.3	30.3	48.6
Wheat Screenings (High Grade)*	9.9	3.3	11.9	2.3	8.5	64.1
Wheat Screenings (High Grade)*	11.0	3.5	15.1	2.5	4.9	66.0
Wheat Screenings (Low Grade)*	11.5	3.2	12.0	2.4	6.8	64.1
Wheat Screenings (Low Grade)*	9.0	3.6	12.2	2.2	9.1	63.7
Wheat Screenings (Wisconsin)	9.6	2.8	13.4	2.8	7.7	63.7
Wheat Scourings	8.5	15.3	18.7	1.8	10.4	45.4
Wheat Scourings	10.7	12.1	14.8	3.8	10.0	57.6
Wheat Scourings	9.1	4.3	12.9	2.4	12.4	51.9
Barley Screenings	10.1	6.4	10.4	2.8	14.9	55.4
Buckwheat Hulls	10.1	2.4	4.9	1.0	43.1	39.5
Flax Bran (Stems, Pods, Meal)	7.0	5.0	17.3	2.9	24.7	33.1
Flax Bran (Stems, Pods)	7.4	5.7	6.0	4.3	41.8	34.9
Flax Seed Screenings	9.9	7.6	15.8	12.7	15.5	39.0
Flax Seed Screenings Meal	9.7	6.4	14.5	12.7	13.5	44.3
Cotton Seed Hulls	8.5	2.3	3.7	1.5	44.5	39.5
Rice Hulls	10.6	16.6	3.2	0.6	29.6	39.4
Rice Hulls	5.5	18.2	2.1	0.7	37.4	36.1
Peanut Hulls	6.6	2.1	5.5	1.2	70.9	13.7
Clover Screenings (High Grade)	9.4	4.7	24.5	7.0	11.2	33.3
Clover Screenings (Low Grade)*	9.9	7.8	23.1	5.9	13.5	34.7
Clover Screenings Meal	11.4	6.1	30.9	4.8	12.8	34.0
Grain and Seed Screenings	7.1	21.1	11.3	4.4	9.3	46.9
Corn Cockle	8.7	4.0	14.6	6.2	5.4	61.1
Weed Seeds	10.0	4.2	13.3	7.0	11.6	53.9

*Based on amount of weed seeds present.

FORMULAS FOR HOME MIXING CONDIMENTAL STOCK FOODS

In response to numerous requests for formulas for the home mixing of condimental feeds the following are furnished:*

Formula No. 1.—Ground gentian, one pound; ground ginger, $\frac{1}{4}$ pound; powdered saltpeter, $\frac{1}{4}$ pound; powdered iron sulfate, $\frac{1}{4}$ pound. Mix, and give one table spoonful in feed once daily for ten days, omit for three days, and feed as above for ten days more.

Formula No. 2.—Fenugreek, 8 pounds; ginger, 8 pounds; powdered gentian, 8 pounds; powdered sulfur, 8 pounds; potassium nitrate, 8 pounds; resin, 8 pounds; cayenne pepper, 4 pounds; flax seed meal, 44 pounds; powdered charcoal, 20 pounds; common salt, 20 pounds; wheat bran, 100 pounds.

Formula No. 3.—Powdered gentian, 1 pound; powdered ginger, 1 pound; fenugreek, 5 pounds; common salt, 10 pounds; bran, 50 pounds; oil meal, 50 pounds.

Formula No. 1 is a concentrated mixture containing no filler and can be purchased at retail in Lafayette for 20 cents per pound or \$13 per hundred pounds.

Formula No. 2 closely approximates many prepared stock foods on the market and can be fed according to directions furnished with such mixtures. Retail price, 10 cents per pound; \$6 per hundred pounds.

Formula No. 3 is simpler than either 1 or 2 and can be fed in quantities similar to No. 2 or larger if desired. Retail price, 10 cents per pound; \$5 per hundred pounds.

CLASSIFICATION OF FEEDING STUFFS

Based on the average protein content as shown by the analysis of inspection samples, the feeding stuffs offered for sale in Indiana may be conveniently divided into the following classes:

1. Forty per cent. and over: Cotton seed meal, blood meal, meat scraps, feeding tankage, etc.
2. Thirty to forty per cent.: Linseed meal, Continental gluten feed, etc.
3. Twenty to thirty per cent.: Gluten feed, corn germ meal, cold pressed cotton seed cake, dried distillers' grains, calf meals, Unicorn dairy ration, etc.
4. Fourteen to twenty per cent.: Wheat bran, wheat middlings, red dog flour, cotton seed meal and hulls (feed meal), buckwheat mixed feed, Sucrene dairy feed, Sugarota horse and dairy feed, Hammond dairy feed, Quaker dairy molasses feed, etc.
5. Eight to fourteen per cent.: White middlings, corn bran, corn and oats chop, miscellaneous chop feeds, Daisy dairy feed, H. O. feed, Schumacher horse feed, Schumacher stock feed, Hammond horse feed, etc.
6. Below eight per cent.: Low grade oat feeds, cotton seed hulls, buckwheat hulls, etc.

*Wisconsin Bulletin No. 161.

STANDARD CLASSIFICATION OF COTTON SEED MEAL¹

1. Choice Cotton Seed Meal must be finely ground, perfectly sound and sweet in odor, yellow, free from excess of lint and by analysis must contain at least 8 per cent. of ammonia (6.58 per cent. nitrogen), or 49 per cent. of combined protein and fat.

2. Prime Cotton Seed Meal must be finely ground, of sweet odor, reasonably bright in color, yellow, not brownish or reddish, free from excess of lint, and by analysis must contain at least 7½ per cent. of ammonia (6.17 per cent. nitrogen), or 46 per cent. of combined protein and fat.

3. Good Cotton Seed meal must be finely ground, of sweet odor, reasonably bright in color and by analysis must contain at least 7 per cent. of ammonia (5.76 per cent. nitrogen), or 43 per cent. of combined protein and fat.

4. Cotton Seed Meal not coming up to contract grade shall be of good delivery if within one-half of 1 per cent. of the ammonia content, (0.41 per cent. nitrogen), or 2½ per cent. of combined fat and protein content of the grade sold, or of the sale sample, but the settlement price shall be reduced at the rate of one-tenth of contract price for each 1 per cent. and proportionately for fractions of deficiency in ammonia, and one forty-ninth, one forty-sixth or one forty-third as the case may be of deficiency in protein and fat.

RESULTS OF INSPECTION AND DESCRIPTION OF FEEDING STUFFS

For the year ending July 1, 1909, our regular inspectors collected 1646 samples representing the products of 819 manufacturers, and for the second period ending January 1, 1910, 1085 samples representing 510 manufacturers were secured. The analysis of 2702 of these samples is reported in detail in Tables VII and VIII.

The analysis of the samples shows that there has been a marked improvement in the character of the feeding stuffs sold since the previous inspection as regards the use of adulterants, materials not guaranteed and the maintaining of guarantees. In the first year's inspection it was impossible to secure samples of all registered brands and for this reason manufacturers, especially those of mill by-products in the state, were unable to make corrections in their guarantees.

The inspection covering the second period in this report shows gratifying improvement over the previous inspections in all particulars. The samples collected were practically all registered and labeled, the large majority met the guarantees and the presence of adulterants was reduced to a minimum and consisted of the presence of corn bran in seven samples and wheat screenings in 39 samples. In a majority of cases the presence of these materials was due to an imperfect understanding of the law and prompt steps were taken to register the feed properly or the use of corn bran and screenings was discontinued.

In 32 of the more prominent feeding stuffs the samples taken during the second period are of higher average composition and lower price than samples of similar feeds taken during the first period. The decrease in price ranged from 7 cents to \$2.20 per ton. Samples of 16 of the 32 feeding stuffs show a marked increase in composition compared with samples reported in previous report.²

¹The Inter-State Cotton Crushers' Association.

²Ind. Bulletin 181.

Summarized,* the results of the inspections show that the feeding stuffs offered for sale in Indiana are very free from adulterants, that the large majority of manufacturers and dealers are obeying the law both as regards furnishing feed up to guarantee and properly labeling same and that as a result of the Feeding Stuff Law the consumers of this state are receiving better feed for money expended than ever before.

Of the 29 samples collected and not reported the majority are brands of which a large number of duplicates were secured and for the balance satisfactory evidence was furnished that they were not representative of the shipment from which samples were taken.

In the detailed discussion of the inspection and samples which follows the inspection from July 1, 1908 to July 1, 1909, is designated as the first period and that from July 1, 1909, to January 1, 1910, as the second period.

*Table VI.

TABLE VI.—Summary of the Results of Inspection

FEEDING STUFF	Number samples inspected	Average Composition		Number of samples taken before registration	Number not registered	Number equal to guarantee	Number below guarantee in Crude Fat	Number below guarantee in Crude Protein	Number below guarantee in both Crude Fat and Crude Protein	Number containing corn bran	Number containing wheat screenings	Number containing corn cobbles or other weed seeds	Number containing chaff	Number containing cob meal
		Water per cent.	Crude Fat per cent.											
1..Wheat bran	215	10.7	3.9	14.9	20.09-30-33	11	1	219	72	39	16	5	28	117
2..Wheat bran	196	9.6	4.3	16.3	25.53-30-33	9	1	157	33	4	—	5	15	22
3..Wheat bran and screenings	24	10.2	4.0	14.7	25.20-31-30	3	1	17	3	3	—	—	—	—
4..Wheat bran and screenings	23	9.3	4.3	16.0	24.78-30-30	3	—	12	2	—	—	—	—	—
5..Wheat bran and screenings	1	9.4	3.7	14.1	24.00	—	—	—	—	—	—	—	—	—
6..Wheat bran and screenings	1	10.4	3.8	15.8	24.00	—	—	—	—	—	—	—	—	—
7..Standard wheat middlings and shorts	301	10.3	4.5	15.6	27.69-33-35	11	3	224	55	25	15	—	4	23
8..Standard wheat middlings and shorts	212	10.3	4.5	16.7	28.79-31-33	9	—	169	43	10	7	—	4	—
9..White middlings	41	10.8	3.8	12.8	28.75-34-36	1	—	8	30	35	33	—	—	—
10..White middlings	20	11.1	3.8	14.6	27.81-34-33	3	—	5	15	3	3	—	—	—
11..Wheat middlings and screenings	4	10.2	4.5	15.8	28.25-35-31	—	—	3	1	—	—	—	—	—
12..Wheat middlings and screenings	3	9.8	4.2	16.5	26.67-34-27	1	—	—	—	—	—	—	—	—
13..Wheat middlings and screenings	3	9.3	4.3	16.3	25.00	—	—	—	—	—	—	—	—	—
14..Wheat middlings and screenings	3	10.3	4.3	17.5	25.34-24-29	—	—	—	—	—	—	—	—	—
15..Mixed feed wheat product	168	10.0	4.1	16.2	26.53-30-33	11	—	112	43	33	23	3	6	39
16..Mixed feed wheat product	82	10.0	4.2	16.7	26.75-30-33	3	—	64	13	—	—	—	—	—
17..Red dog flour	3	9.7	4.8	17.7	33.43-30-70-36	—	1	3	1	1	1	—	—	—
18..Wheat screenings	3	9.7	8.7	16.5	24.00	—	—	—	—	—	—	—	—	—
19..Wheat screenings	1	9.1	8.1	12.6	27.00	—	—	—	—	—	—	—	—	—
20..Mill screenings	1	11.4	2.3	14.0	30.00	—	—	—	—	—	—	—	—	—
21..Mixed feed wheat product and screenings	1	9.3	6.5	13.3	10.00	—	—	—	—	—	—	—	—	—
22..Mixed feed wheat product and screenings	1	7.4	8.6	10.2	10.00	—	—	—	—	—	—	—	—	—
23..Mixed feed wheat product and screenings	27	9.9	4.3	15.5	26.13-30-30	3	—	20	7	—	—	—	—	—
24..Mixed feed wheat product and chaff	21	10.4	4.1	16.4	24.67-21-30	1	—	17	4	—	—	—	—	—
25..Mixed feed wheat product and chaff	1	9.8	4.4	14.6	24.00	—	—	—	—	—	—	—	—	—
26..Mixed feed wheat and corn product	85	9.7	4.2	14.3	29.29-23-33	3	—	54	18	15	2	—	1	18
27..Mixed feed wheat and corn product	53	9.9	4.4	16.1	25.35-31-30	1	—	53	5	—	—	—	1	—
28..Mixed feed wheat and corn product	51	9.9	4.1	14.5	29.57-32-30	5	—	33	8	5	—	—	—	—
29..Mixed feed wheat and corn product and screenings	53	10.1	4.1	16.1	24.70	—	—	—	—	—	—	—	—	—
30..Mixed feed wheat and rye product	6	10.1	4.0	15.7	27.20-27-23	1	—	46	12	—	—	—	—	—
31..Mixed feed wheat and rye product	3	9.3	3.9	14.0	27.00-25-23	—	—	5	1	—	—	—	—	—
32..Rye products	5	10.0	2.7	14.3	25.30-24-30	—	—	3	2	1	1	—	—	—
33..Rye products	1	10.3	3.0	14.9	24.00	—	—	—	—	—	—	—	—	—
34..Buckwheat bran	9	9.6	3.6	14.3	14.00-10-30	1	—	3	1	1	1	—	—	—
35..Buckwheat bran	4	9.3	4.3	16.6	18.34-15-30	—	—	3	1	1	1	—	—	—

*Samples taken July 1, '08-July 1, 1909.
 **Samples taken July 1, '09-Jan. 1, 1910.

TABLE VI.—Summary of the Results of Inspection (continued)

Number samples inspected	Average Composition		Average retail price per ton \$	Range in retail price per ton \$	Number of samples taken before registration	Number not registered	Number equal to guarantee	Number below guarantee in Crude Fat	Number below guarantee in Crude Protein	Number in both Crude Fat and Crude Protein	Corn bran containing	Number containing wheat screenings	Number containing corn cobbles or other weed seeds	Number containing chaff	Number containing cob meal
	Water per cent.	Crude Fat per cent.	Crude Protein per cent.												
19. Mixed feed buckwheat product.	4	9.9	4.6	19.3	14.50-10-30		2		3						
20. Mixed feed buckwheat product.	3	9.8	4.7	19.1	14.00-12-17	2	16	4	4						
21. Corn bran	20	9.7	7.3	9.6	17.05-10-27	1	9	1	1	1					
22. Hominy feed, meal or chop.	10	9.6	7.7	9.8	18.20-14-24		20	5	6	1					
23. Hominy feed, meal or chop.	31	8.8	8.3	10.3	20.17-24-35	2	2	6	1						
24. Parched hominy feed.	28	8.1	8.6	10.5	20.10-24-33		16	6	4	4					
25. Gluten feed	3	10.3	6.4	8.7	21.50-18-25		7	1	3	1					
26. Corn germ meal	10	8.6	8.1	25.4	28.75-24-30	1	1	2	3						
27. Corn germ meal	6	8.0	4.3	24.8	30.81		1	3	1						
28. Corn and oats	5	7.0	10.6	20.1	28.00-20-30	1	1	3	1						
29. Corn and oats	3	7.3	11.8	19.3	27.50		2								
30. Corn and oats	103	10.9	4.1	9.8	32.16-23-40	3	183	35	12	2					
31. Corn, oats and wheat	22	10.5	4.3	9.3	30.94-23-37	6	70	13	13	2					
32. Corn, oats and rye	9	11.1	3.8	9.8	27.78-30-39	1	3	2	5	1					
33. Corn, oats and rye	6	10.9	4.0	10.3	31.34-30-35		3	1	2						
34. Corn, oats, rye and barley	9	11.0	3.3	10.0	31.00-30-33		2								
35. Corn, oats, rye and barley	1	9.9	4.4	9.5	30.00		1								
36. Corn, oats, wheat, rye and barley	1	11.8	4.4	10.1	32.00		1								
37. Corn, oats and corn bran	37	10.7	4.3	10.1	31.70-28-37	5	19	6	4	3					
38. Corn, oats, wheat and corn bran	8	9.8	4.7	9.8	29.88-35-35	2	6		3						
39. Corn, oats, wheat and corn bran	3	11.1	4.0	11.4	32.67-24-33		1	1	1						
40. Corn, oats, wheat and corn bran	8	10.6	4.6	9.9	27.67-23-30		3	1	1						
41. Corn, oats and wheat bran	1	9.5	4.3	9.5	30.00		1								
42. Corn, oats, wheat bran	7	9.6	4.9	11.3	31.50-23-36		4	1	3	1					
43. Corn, oats, wheat screenings	3	11.9	4.0	9.3	34.00				3						
44. Corn, oats and wheat screenings	1	9.8	3.7	9.8	28.00				3						
45. Corn, oats and wheat screenings	7	10.9	3.7	10.6	30.71-35-33		8	3	3	1					
46. Corn, oats, wheat and wheat screenings	1	11.8	4.3	10.3	28.00				1						
47. Corn, oats, rye and wheat screenings	1	11.7	3.4	11.4	30.00	2		1	3	1					
48. Corn, oats, rye and wheat screenings	3	10.6	3.6	9.8	30.00		1	1							
49. Corn, oats, rye and wheat screenings	3	10.9	3.1	10.3	31.50-30-33		3								
50. Corn, oats, rye, barley and wheat screenings	1	10.8	3.1	11.0	30.00		1								

*Samples taken July 1, '08-July 1, 1909.
 **Samples taken July 1, '08-Jan. 1, 1910.

FEEDING STUFF

TABLE VI. — Summary of the Results of Inspection (continued)

FEEDING STUFF																
Number samples inspected	Average Composition			Average price per ton \$	Range in retail price per ton \$	Number of samples taken before registration	Number not registered	Number equal to guarantee	Number below guarantee in Crude Fat	Number below guarantee in Crude Protein	Number below in both Crude Fat and Crude Protein	Number containing corn bran	Number containing wheat screenings	Number containing corn cobbles or other weed seeds	Number containing chaff	Number containing cob meal
	Water per cent.	Crude Fat per cent.	Crude Protein per cent.													
1	11.1	4.4	10.6	39.00				1								
1	10.1	4.1	10.3	32.00				1								
2	10.5	4.3	10.6	29.00 28-30				2								
3	10.6	3.5	13.2	30.00				1								
1	10.9	3.6	12.3	28.00					1							
1	13.9	3.0	12.0	20.00		1		1								
1	9.9	3.9	14.0	26.00				1								
1	11.8	3.5	16.1	27.00					1							
1	12.0	3.9	10.1	32.00				1								
1	10.7	4.0	10.7	32.00					1							
2	11.2	3.6	13.1	27.50 27-28					1	1						
1	7.0	2.3	10.3	25.00			1									
2	11.0	3.9	13.8	28.00 25-31					1	2	1					
1	10.1	3.9	9.3	30.00				1								
1	9.8	4.8	9.9	33.00												
1	11.9	4.3	9.9	28.00				1								
4	11.0	3.8	9.3	27.25 28-30		2		4								
1	10.6	3.9	13.2	26.00				1								
2	9.8	3.6	11.6	26.00 28-29				2								
1	9.9	3.9	11.6	29.00					1							
1	11.0	4.8	11.7	23.00					1							
1	10.9	3.7	9.7	30.00			1									
1	9.4	3.7	12.3	28.00				1								
1	7.9	3.8	7.9	20.00					1							
1	10.3	6.9	8.8	22.00												
1	6.0	33.0	29.8				1									
30	7.8	7.9	34.5	37.07 31-40		3	2	12	3	15	2					
17	7.6	8.5	34.7	38.45 30-45				14	1	2						
3	9.2	8.7	26.3	35.07 35-37				3								
3	7.4	8.6	26.5	35.00				3								

*Samples taken July 1, '08-July 1, 1909.
 **Samples taken July 1, '08-Jan. 1, 1910.

TABLE VI.—Summary of the Results of Inspection (continued)

FEEDING STUFF	Number samples inspected	Average Composition			Average retail price per ton \$	Range in retail price per ton \$	Number of samples taken before registration	Number not registered	Number equal to guarantee	Number below guarantee in Crude Fat	Number below guarantee in Crude Protein	Number containing both Crude Fat and Crude Protein	Number containing corn bran	Number containing wheat screenings	Number containing corn cockle or other weed seeds	Number containing chaff	Number containing cob meal
		Water per cent.	Crude Fat per cent.	Crude Protein per cent.													
63**Flax screenings meal	1	9.0	9.5	14.3	30.00	30.00			1								
64**Cotton seed meal	90	7.3	9.4	40.3	29.59	37-35	3	2	12	3	15	2					
65**Cotton seed meal	13	7.0	8.3	41.4	33.83	29-40			6	4	5	1					
66**Cold pressed cotton seed cake	1	8.1	6.4	25.4	23.00				1								
67**Cold pressed cotton seed cake	1	7.5	10.1	21.1	23.00						1						
68**Cotton seed meal and cotton seed hulls	7	7.3	6.3	19.4	22.07	26-34			2	3	4	3					
69**Cotton seed meal and cotton seed hulls	7	7.3	4.3	16.3	27.00	25-30			3	3	2	3					
70**Cotton seed hulls	1	8.3	2.5	3.8	7.50												
71**Cotton seed hulls	1	9.0	1.1	3.4	13.00		1		1								
72**Malt sprouts	1	10.1	2.0	23.3	21.50				1								
73**Dried distillers' grains	1	6.6	6.3	23.4	22.50				1								
74**Alfalfa products	5	8.3	2.1	15.3	23.30	29-35			4	1							
75**Alfalfa products	4	8.9	1.9	15.0	26.75	30-30			3	3		1					
76**Proprietary and molasses feeds guaranteed to contain																	
A *Cereals, by-products, no filler	16	9.3	4.9	15.4	33.60	29-40	3		5	11	9	9					
*Cereals, by-products, no filler	16	9.2	4.7	12.3	32.40	28.00-36	1		7	4	8	3					
B *Cereals, by-products, molasses and no filler	3	12.3	3.1	10.7	37.00	35-33			1	1	2	1					
**Cereals, by-products, molasses and no filler	4	11.2	3.6	11.9	37.75	37-40											
C *Alfalfa and molasses	11	11.3	1.1	12.7	28.00	26-30			1	3	1	1					
**Alfalfa and molasses	3	16.4	0.5	12.2	29.34	30-33			2	9	4	3					
D *Cereals, by-products, grain screenings and molasses	11	10.9	4.1	15.2	28.50	25-30	1		8	1	3	1					
**Cereals, by-products, grain screenings and molasses	15	10.9	4.5	13.7	27.80	16-38			10		5						
E *Cereals, by-products, grain screenings, flax bran and molasses	2	10.4	5.3	16.3	35.00	30-40			3								
F *Cereals, by-products, flax bran, oat clippings and molasses	8	10.7	5.5	15.3	27.55	24.40-30			6		2						
**Cereals, by-products, flax bran, oat clippings and molasses	8	9.3	5.1	15.5	28.50	26-33			1	2	7	2					
G *Cereals, by-products, oat hulls and molasses	5	8.8	2.2	14.1	26.00	25-30						5					

*Samples taken July 1, '06-July 1, 1909.
 **Samples taken July 1, '06-Jan. 1, 1910.

FROM WHEAT.

Bran consists of the outer coating of the wheat kernel and because of its fat and protein content is a very valuable feed. Of the 511 samples analyzed 105 were deficient in crude fat, 43 in crude protein and 16 in both crude fat and crude protein. Seventy-two per cent. of the samples deficient in crude fat, 91 per cent. of those deficient in crude protein and all deficient in both crude fat and crude protein were secured during the first period.

The average analysis and selling price per ton for the samples of the first period were 3.9 per cent. crude fat, 14.9 per cent. crude protein and \$26.09, and for the second period 4.2 per cent. crude fat, 16.3 per cent. crude protein and \$25.58. Range in price \$20 to \$32 and \$20 to \$33.

For each dollar expended for bran the consumer received the following amounts of crude fat and crude protein: 1st period.—3 pounds and 11.4 pounds; 2nd period.—3.3 pounds and 12.7 pounds.

Ten of the samples contained corn bran and 48 wheat screenings.

Middlings and Shorts are terms used interchangeably in the Indiana trade and consist of the coating of the wheat kernel just below the bran layer, the finer particles and fragments of bran and flour particles. They are rich in digestible fat and protein and an excellent feed. Of the 531 samples analyzed 98 were deficient in crude fat, 35 in crude protein and 22 in both crude fat and crude protein. The average analysis and selling price per ton of samples for the first period were 4.5 per cent. crude fat, 15.6 per cent. crude protein and \$27.63, and for the second period 4.5 per cent. crude fat, 16.7 per cent. crude protein and \$26.76. Range in price \$23 to \$35 and \$20 to \$32.

For each dollar expended for middlings the consumer received the following amounts of crude fat and crude protein: 1st period.—3.3 pounds and 11.3 pounds; 2nd period.—3.4 pounds and 12.5 pounds.

Four of the samples contained wheat screenings.

Middlings are often divided into standard middlings, germ middlings, flour middlings, etc., depending on the separations made but in this report all the classes mentioned are included under the preceding heading.

White Middlings as used in many parts of Indiana designate a product which is in reality a low grade flour much below red dog in feeding value. Of the 61 samples secured 51 were deficient in crude fat, 38 in crude protein and 36 in both crude fat and crude protein. The average composition and selling price per ton for the first period were 2.8 per cent. crude fat, 12.8 per cent. crude protein and \$28.75, and for the second period 2.8 per cent. crude fat, 14.6 per cent. crude protein and \$27.31. Range in price \$24 to \$36 and \$24 to \$32.

For each dollar expended for white middlings the consumer received the following amounts of crude fat and crude protein: 1st period.—2 pounds and 8.9 pounds; 2nd period.—2.1 pounds and 10.7 pounds.

The record made by this class of feed compared with that of the previous inspection does not show any material improvement especially as regards the content of crude fat. In the second period some improvement is shown in the protein content due in most cases to the addition of more germ to the white middlings. The following table shows the composition of an average sample of white middlings, low grade flour and standard middlings:

Pounds in One Hundred

MATERIAL	Water	Ash	Crude Protein	Crude Fat	Crude Fiber	Nitrogen Free Extract
White Middlings -----	10.86	0.86	10.58	1.88	0.20	77.19
Low Grade Flour -----	7.78	0.97	10.06	1.70	0.25	79.21
Standard Middlings -----	10.20	3.33	16.01	4.70	4.38	61.44

It will be noted that for the first period the average price for white middlings exceeded that for standard middlings \$1.07 and for the second period 55 cents per ton and that 1.3 pounds less crude fat, 1.8 pounds less crude protein in the first period and 1.1 pounds less crude fat, 1.8 pounds less crude protein in the second period were furnished for each dollar.

A careful consideration of the preceding by the consumer who wishes to supplement home grown with commercial feeds will convince him that this class of feed is not an economical one to purchase at an average price higher than that asked for standard middlings. The addition to middlings and shorts of low grade flour, which does not meet a ready sale, is practiced quite extensively and in other cases the feed results from imperfect separations in the process of milling.

Many of the brands showing deficiencies have been reregistered with lower guarantees and others have been improved in composition by the adoption of more improved processes in milling.

Shipstuff consists of a mixture of bran and middlings, bran and shorts or of all three of these materials. In this report all such mixtures are classed under the head of Mixed Feed, Wheat Product. Of the 176 samples analyzed 60 were deficient in crude fat, 32 in crude protein and 23 in both crude fat and crude protein. Seventy per cent. of the samples deficient in crude fat as well as those showing deficiency in crude protein and both crude fat and crude protein were collected during the first period. The average analysis and selling price per ton of samples for the first period were 4.1 per cent. crude fat, 15.2 per cent. crude protein and \$26.53, and for the second period 4.2 per cent. crude fat, 16.7 per cent. crude protein and \$25.75. Range in price \$20 to \$33 and \$20 to \$32.

For each dollar expended for shipstuff the consumer received the following amounts of crude fat and crude protein: 1st period.—3.1 pounds and 11.3 pounds. 2nd period.—3.3 pounds and 13 pounds.

Five samples contained wheat screenings.

Red Dog Flour consists of low grade flour and fine particles of bran which cannot be separated in the process of milling. Of the seven samples secured all but one, which was deficient in both crude fat and crude protein, were up to guarantee. The average analysis and selling price per ton for the first period were 4.8 per cent. crude fat, 17.7 per cent. crude protein and \$33.43, and for the second period 3.7 per cent. crude fat, 16.5 per cent. crude protein and \$34. Range in price \$30.70 to \$36 and for the second period \$34.

Screenings consist of the smaller, imperfect grains of wheat, weed seeds and other foreign materials separated from the wheat in preparing it for milling. Of the two samples analyzed one was deficient in crude fat.

The average analysis and selling price per ton were 2.7 per cent. crude fat, 13.3 per cent. crude protein and \$28.50. Range in price \$27 to \$30.

Scourings consist of the small particles from the outer bran coating of the wheat kernel and the dust and dirt removed by the scourer. Analysis of representative samples will be found in Table II.

Sweepings consist of the cleanings from the bin, around spouts and other parts of the mill. The two samples analyzed had an average composition and selling price per ton of 5.1 per cent. crude fat, 11.2 per cent. crude protein and \$10.

Bee Wings consist of the light, fine, thin, membranous coating set free from the crease of the wheat kernel in the process of crushing the wheat. Analysis of samples from purifier and sifter will be found in Table II.

Sixty-one samples of bran and screenings, bran and sweepings, middlings and screenings, etc., were analyzed. Summary of the results will be found in Table VI and details in Tables VII and VIII.

Owing to their composition, palatability and relation to quality of dairy products, wheat by-products, especially bran and middlings, are considered as among the standard and most valuable concentrates and their use is recommended by authorities on the subject of cattle feeding.

FROM RYE

Six samples of mixed bran and middlings were collected. These products are secured from the same portions of the rye grain as are the bran and middlings from the wheat kernel. The average composition and selling price per ton were 2.9 per cent. crude fat, 14.6 per cent. crude protein and \$26.60. Range in price \$20 to \$30. One sample was deficient in crude fat, three in crude protein and one in both crude fat and crude protein. The average selling price is higher than that of wheat bran and the composition somewhat lower.

FROM BUCKWHEAT

Bran consists of a mixture of buckwheat hulls and middlings prepared by the millers of buckwheat to enable them to dispose of buckwheat hulls. Seven samples analyzed have an average composition and selling price per ton of 3.9 per cent. crude fat, 15.4 per cent. crude protein and \$16.17. Range in price \$10 to \$20. Two of the samples were deficient in both crude fat and crude protein but marked improvement is shown by this feed compared with previous inspection.

Middlings consist of that portion of the buckwheat grain immediately inside the hull and are rich in crude fat and crude protein and have a high feeding value. No samples of this feed were secured.

Mixed Feed consists of relatively large proportions of middlings and shorts and a small proportion of hulls. The seven samples analyzed had an average composition and selling price per ton of 4.7 per cent. crude fat, 19.2 per cent. crude protein and \$16.42. Range in price \$10 to \$20. Two of the samples were deficient in crude protein.

FROM CORN

Bran consists of the outer coating of the corn kernel and is variable in composition, depending on the process of manufacture. It is of low feeding value and is often used as an adulterant for wheat bran and other

wheat by-products. The 30 samples analyzed had an average composition and selling price per ton of 7.5 per cent. crude fat, 9.7 per cent. crude protein and \$18.08. Range in price \$14 to \$27. Four of the samples secured in the second period were deficient in both crude fat and crude protein.

Hominy Feed or Chop consists of the bran coating, germ and part of the starch portions of the corn kernel secured as a by-product in the manufacture of hominy. Of the 63 samples analyzed 11 were deficient in crude fat, 9 in crude protein and 5 in both crude fat and crude protein.

The average analysis and selling price per ton of the samples for the first period were 8.3 per cent. crude fat, 10.3 per cent. crude protein and \$29.17 and for the second period 8.5 per cent. crude fat, 10.5 per cent. crude protein and \$29.10. Range in price \$24 to \$35 and \$24 and \$36. In the first period for each dollar the consumer received 5.7 pounds crude fat and 7.1 pounds crude protein and in the second period 5.8 pounds crude fat and 7.2 pounds crude protein.

Two samples of scorched hominy feed were analyzed, the average composition and selling price per ton being 6.4 per cent. crude fat, 8.7 per cent. crude protein and \$21.50. Range in price \$18 to \$25.

Hominy Hearts are secured as a by-product in the manufacture of hominy and consist of the germ or heart of the grain. This feed was not found on the Indiana markets.

Gluten Feed is a by-product from the manufacture of starch and glucose and consists of the bran coating, gluten and the germ. In other words, it is the corn grain less the starch. It is rich in crude protein and is considered an excellent feed. Of the 16 samples analyzed three were deficient in crude fat, five in crude protein and one in both crude fat and crude protein. The average composition and selling price of samples for the first period were 3.1 per cent. crude fat, 25.4 per cent. crude protein and \$28.75, and for the second period 4.2 per cent. crude fat, 24.8 per cent. crude protein and \$30.81. Range in price \$24 to \$31. For each dollar expended for gluten feed the consumer obtained for the first period 2.2 pounds crude fat, 17.7 pounds crude protein and for the second period 2.7 pounds crude fat and 16.1 pounds crude protein.

Gluten Meal is a by-product from the manufacture of starch and glucose, consisting of the gluten layer. No samples were secured and the material does not seem to be on the market in this section.

Corn Germ Meal or Germ Oil Meal is a by-product from the manufacture of starch, glucose and other corn products and consists of the germ layer from which the corn oil has been extracted by pressure. The unground product is designated as *germ oil cake*. The average analysis and selling price per ton of the seven samples secured were 7.2 per cent. crude fat, 11.2 per cent. crude protein and \$19.65. Range in price, \$26 to \$30. One sample was deficient in crude fat.

Dried Distillers' Grains consist of the dried slop from the distillation of the beer in the manufacture of whiskey and alcohol. The slop is filtered and dried, producing a valuable feed rich both in crude fat and crude protein, especially the latter. Distillers' Grains may consist of corn, rye and other cereals but the samples obtained in Indiana have been chiefly from corn. The sample analyzed contained 6.3 per cent. crude fat, 26.4 per cent. crude protein and sold for \$22.50 per ton.

Corn and Cob Meal consists of the whole ear of corn ground or crushed just as it is received from the field without the addition either of cob or kernel.

Corn Screenings consist of small pieces of cob, butts of corn, particles of husks, chaff and the imperfect and decayed kernels which are not removed in the process of shelling. This material is often used as an adulterant.

Cob Meal consists of finely ground corn cobs which are largely woody fiber. It contains but little crude fat and crude protein and a large amount of crude fiber. It is often used as a filler, serving to give bulk and roughness. It has little or no feeding value and is a common adulterant of feeding stuffs.

FROM OATS

No samples of unmixed oat feed were secured. Analyses of oat bran, oat middlings, oat shorts, oat clippings and oat hulls obtained as by-products in the manufacture of oat meal and which are used in many reinforced feeds will be found in Table II. The various products are secured from layers of the oat grain corresponding to those of the wheat grain from which similar products are obtained.

Oat Clippings are the small hairs and dust separated from the oats in the clipping machine. They bear much the same relation to the oat kernel as scourings do to the wheat kernel and contain considerably larger amounts of crude fat and crude protein than the hulls and considerably less fiber. They are often used as a filler and also as an adulterant.

Oat Hulls are a common adulterant of feeding stuffs and are much used as a filler. They contain about the same amount of crude fat, crude protein and crude fiber as cob meal, serve a similar function in feeding stuffs and have little or no feeding value.

FROM FLAX SEED

Flax Seed Meal consists of the entire flaxseed ground. The sample secured was not registered and contained 33 per cent. crude fat and 22.8 per cent. crude protein. The term oil meal seems to be used indiscriminately in the Indiana trade, in some cases designating flaxseed meal and in others linseed meal.

Oil Cake is the unground residue from the extraction of oil from ground flaxseed.

Linseed Meal is the ground residue from the extraction of oil from ground flaxseed. The extraction of the oil is accomplished by two methods known as the old and new process and the meals from the two processes are designated as old and new process linseed meal.

Old Process Linseed Meal consists of the residue from crushed flaxseed which have been heated and the oil removed by high pressure.

New Process Linseed Meal consists of the residue from crushed flaxseed which have been heated and the oil extracted by repeated leachings with light naphtha. After the extraction is complete the naphtha is driven from the residue with steam and the meal is entirely without naphtha odor. The extraction of the oil in the new process meal is much more complete, the new process meal containing only one-half as much crude fat and from one to two per cent. more crude protein.

The 47 samples of linseed meal secured were all old process meals, the average composition and selling price per ton of those for the first period being 7.9 per cent. crude fat, 34.5 per cent. crude protein and \$37.07, and for the second period 8.5 per cent. crude fat, 34.7 per cent.

crude protein and \$38.45. Range in price \$31 to \$40 and \$30 to \$45. Three samples of the first period were deficient in crude fat, 15 in crude protein and two in both crude fat and crude protein. For the second period one was deficient in crude fat, two in crude protein and one in both crude fat and crude protein. In the first period for each dollar expended for linseed meal the consumer received 4.3 pounds of crude fat, 18.6 pounds of crude protein and in the second period 4.4 pounds of crude fat and 18.1 pounds of crude protein.

Cold Pressure Linseed Cake. In this process the flaxseed are run through a screw press and the oil extracted by pressure, the process being similar to that employed in the production of cold pressed cotton seed cake described on page 209. Samples of this feed were not available for analysis but would probably contain a higher percentage of crude fat and a considerably lower percentage of crude protein than either the old or new process linseed meals.

Ground Flaxseed Cake. A term used in this report to designate a low grade linseed meal made of inferior flaxseed. The six samples analyzed had an average composition and selling price per ton of 8.3 per cent. crude fat, 26.4 per cent. crude protein and \$35.34. Range in price \$35 to \$37. For each dollar expended for this class of feed the consumer received in the first period 4.9 pounds of crude fat, 14.8 pounds of crude protein, and in the second period 5.1 pounds crude fat and 15.1 pounds crude protein. All the samples were up to guarantee.

Flax Screenings consist of the broken flaxseed, hulls, weed seeds and other foreign materials separated in preparing the flaxseed for the manufacture of linseed oil. The sample analyzed contained 9.5 per cent. crude fat, 14.3 per cent. crude protein and sold at \$30 per ton. Each dollar expended secured 6.3 pounds crude fat and 9.5 pounds crude protein.

The flaxseed products here reported illustrate very forcibly the economy in purchasing high grade materials, and on the basis of feeding ingredients desired and not on price per ton for by the above it is shown that in the high grade material, linseed meal, each dollar secured 22.8 pounds combined fat and protein as against 19.7 pounds in flaxseed cake and 15.8 pounds in flaxseed screenings.

FROM FLAX

Flax Bran as used by manufacturers of compounded feeds is of variable composition and ingredients, but usually consists of flax pods, flax stems from which the tow has been extracted, and small flax seeds. The pods and stems are invariably present in largest amount. As shown in Table II the sample containing no flax seed is low in feeding ingredients and high in crude fiber. While the one containing flax seed is relatively high in crude protein it also contains a high percentage of crude fiber. Since no method is available whereby the consumer can ascertain whether the material used under this name consists of pods, seeds and stems or merely of stems it is believed that no higher feeding value in general should be assigned it than to any other filler and that its use should be regarded as that of filler to furnish bulk and roughness.

The term flax bran as applied to this material is undoubtedly an improper use of the term bran and in the future mixtures of stems, pods, seeds, etc., will have to be registered in accordance with ruling 13, page 175.

This product is sometimes used as an adulterant for alfalfa.

FROM COTTON SEED

Cotton Seed Cake is the residue of cotton seed from which the oil has been extracted after removal of the hulls. In the process of extracting the oil from cotton seeds they are first delinted, the hulls removed, the meats and such hulls as cannot be separated cooked, wrapped in cloths, placed in presses and all the oil possible extracted by pressure. The residue in the cloths from the extraction is cotton seed cake.

Cotton Seed Meal is ground cotton seed cake. It is rich in both crude fat and crude protein, relatively low in crude fiber and is highly regarded as a concentrated feeding stuff. Of the 43 samples secured seven were deficient in crude fat, 20 in crude protein and three in both crude fat and crude protein. Of the samples showing deficiencies, 72 per cent. were collected in the first period. The average composition and selling price per ton for samples of the first period were 9.4 per cent. crude fat, 40.3 per cent. crude protein and \$29.59, and for the second period 8.3 per cent. crude fat, 41.4 per cent. crude protein and \$33.83. Range in price \$27 to \$35 and \$29 to \$40. In the first period for each dollar expended the consumer received 6.4 pounds crude fat and 27.2 pounds crude protein and in the second period 4.8 pounds crude fat and 24.5 pounds crude protein.

Cold Pressed Cotton Seed Cake consists of the residue from cotton seeds after extraction of the oil by what is known as the cold pressure system. In preparing this material the cotton seeds are delinted¹⁰ and the entire seed without heating or hulling is put into a screw press and the oil extracted by pressure. The residue from this process consisting of the hulls, meal and such lint as was not removed constitutes the cold pressed cotton seed cake which is sold as a feeding stuff without further crushing. It is a light, rather fluffy material containing on an average less crude fat and 17.5 per cent. less crude protein than cotton seed meal. The two samples analyzed had an average composition and selling price per ton of 8.3 per cent. crude fat, 23.3 per cent. crude protein and \$28.50. Range in price \$28 to \$29.

One of the samples was deficient in crude protein. For each dollar expended the consumer purchasing this class of feed secured 5.8 pounds crude fat and 16.4 pounds crude protein.

This feeding stuff is comparatively new to Indiana markets and many inquiries have been received regarding it. The only experiments available are those reported in Louisiana Bulletin No. 110 in which the following conclusions are given:

"Cold pressed cotton seed cake is not as valuable for milk and butter production as an equal weight of choice cotton seed meal and hulls mixed in the proportion of two parts of meal to one part of hulls.

The analysis of cold pressed cake is a reliable indication of its feeding value."

Among the principal claims made for this product is that not having been cooked the albuminoids are more digestible than those in cotton seed meal and being more bulky and less concentrated it can be fed in large quantities without danger of the undesirable results produced when excessive amounts of cotton seed meal are used.

In view of the fact that fully 30 to 40 per cent. or more of this material consists of hulls the Indiana feeder would do well to consider carefully the composition, price and home grown roughage avail-

¹⁰In some cases the delinting is omitted.

able in reaching a decision whether it is more profitable to purchase than cotton seed meal.

Cotton Seed Feed Meal. A trade name used to designate a mixture of cotton seed meal and cotton seed hulls generally in the proportion of 50 to 55 per cent. hulls. The ten samples analyzed had an average composition and selling price per ton of 5 per cent. crude fat, 18.5 per cent. crude protein and \$28.50. Six samples were deficient in crude fat, six in crude protein and four in both crude fat and crude protein. Range in price \$25 to \$34. For each dollar expended the consumer received for the first period 3.6 pounds crude fat, 13.3 pounds crude protein and for the second period 3.1 pounds crude fat and 12.1 pounds crude protein.

Owing to a similarity in names a number of feeders have accepted this material with the understanding that they were receiving cotton seed meal. For this reason it is especially important that consumers should carefully examine the State Chemist's label attached to cotton seed products. Had this been done in the cases mentioned misunderstanding on the part of the consumer would have been impossible.

The cotton seed hulls in this feed are a filler pure and simple and serve to reduce the concentrated cotton seed meal and to furnish roughage. It is for the Indiana consumer to decide whether he can more profitably pay freight on and at the rate of approximately \$13 per ton for cotton seed hulls or purchase the more concentrated material and use home grown roughage in his ration.

Cotton Seed Hulls are the outer portion of the cotton seed. They are high in crude fiber and have little feeding value. Their principal use is as a filler, as a source of roughage and as an adulterant for cotton seed meal. The two samples analyzed had an average composition and selling price per ton of 1.8 per cent. crude fat, 3.6 per cent. crude protein and \$10.25. Range in price \$7.50 to \$13.

FROM BARLEY

Malt Sprouts consist of the dried shoots secured in the germination of barley in the production of malt. They are low in crude fat and rich in crude protein. The sample secured contained 2 per cent. crude fat, 22.2 per cent. crude protein and sold for \$21.50 per ton.

Dried Brewers' Grains consist of the residue left after mashing the malt whereby the greater portion of the carbohydrates is removed leaving a residue rich in protein which on drying becomes a valuable feeding stuff. No samples of this feed were secured.

FROM ALFALFA

Alfalfa Meal consists of ground alfalfa hay. The better grades of alfalfa meal contain a larger proportion of leaves than stems. Of the nine samples analyzed one was deficient in crude protein. The average composition and selling price per ton for the first period were 2.1 per cent. crude fat, 15.3 per cent. crude protein and \$23.20, and for the second period 1.9 per cent. crude fat, 15 per cent. crude protein and \$25.75. Range in price \$26 to \$35 and \$20 to \$30.

MIXED FEED

Of the 183 samples of mixed feed secured containing wheat and corn product 23 were deficient in crude fat, 15 in crude protein and two in

both crude fat and crude protein. The average composition and selling price per ton of samples for the first period were 4.2 per cent. crude fat, 14.3 per cent. crude protein and \$26.29, and for the second period 4.4 per cent. crude fat, 16.1 per cent. crude protein and \$26.29. Range in price \$23 to \$32 and \$21 to \$30. In the first period the consumer received for each dollar 3.2 pounds crude fat, 10.9 pounds crude protein and in the second period 3.5 pounds crude fat and 12.7 pounds crude protein.

Nine samples of mixed feed, wheat and rye product, were secured, three of which were deficient in crude fat, one in crude protein and one in both crude fat and crude protein. The average analysis and selling price per ton of samples collected in the first period were 4.0 per cent. crude fat, 15.7 per cent. crude protein and \$27.20, and for the second period 8.2 per cent. crude fat, 14 per cent. crude protein and \$27. Range in price \$27 to \$28 and \$25 to \$28.

Corn and Oats Feeds usually sold under the name of Corn and Oats Chop or Chop Feed are prepared by mixing corn and oats together generally in the proportion of 56 pounds of the former to 32 pounds of the latter and then grinding. Of the 288 samples secured 47 were deficient in crude fat, 47 in crude protein and 14 in both crude fat and crude protein. The average composition and selling price per ton of samples for the first period were 4.1 per cent. crude fat, 9.8 per cent. crude protein and \$32.16, and for the second period 4.2 per cent. crude fat, 9.3 per cent. crude protein and \$30.94. Range in price \$28 to \$40 and \$23 to \$37.

One hundred and twenty-one samples of mixed chop feed consisting of mixtures of corn, oats, rye, wheat bran, corn and cob meal and wheat product were secured, 22 of which were deficient in crude fat, 31 in crude protein and 10 in both crude fat and crude protein. Summary of the results of the analysis of these samples will be found in Table VI and details in Tables VII and VIII.

ANIMAL MEALS

These consist of by-products from the packing industry such as dried blood, meat meal, blood meal, digester tankage, etc. They are very rich in protein and have been found to be an excellent concentrate in a ration for swine. Of the 27 samples collected seven were deficient in crude fat, six in crude protein and two in both crude fat and crude protein. The average composition and selling price per ton of samples for the first period were 8.6 per cent. crude fat, 53.8 per cent. crude protein and \$40.82, and for the second period 9.6 per cent. crude fat, 57.3 per cent. crude protein and \$50.75. Range in price \$24 to \$120 and \$35 to \$80.

PROPRIETARY AND MOLASSES FEEDS

Proprietary Feeds are a class of compounded feeds sold under names not descriptive of the materials used in their manufacture and varying in ingredients from mixtures of pure cereals and by-products to those containing one or more concentrates with fillers such as grain screenings, oat hulls, oat clippings, light oats, flax bran, etc. In this class are also included mixtures of by-products and cob meal, and corn offal, such as husks, silks and corn screenings. The palatability of the feed is often increased by the addition of molasses and in many cases of condiments.

Molasses Feeds are generally mixtures of by-products such as cotton seed meal, brewers' grains, malt sprouts and other concentrates with

fillers such as oat hulls, oat clippings, grain screenings, flax bran and molasses. Many molasses feeds consist of alfalfa meal and molasses only.

Of the 137 samples analyzed 50 were deficient in crude fat, 48 in crude protein and 23 in both crude fat and crude protein. The average composition and selling price per ton of the samples for the first period were 3.7 per cent. crude fat, 13.6 per cent. crude protein and \$28.94, and for the second period 4.2 per cent. crude fat, 13.4 per cent. crude protein and \$31.35. For each dollar expended for all classes of proprietary and molasses feeds during the first period the consumer received 2.6 pounds crude fat and 9.4 pounds crude protein and in the second period 2.7 pounds crude fat and 8.5 pounds crude protein.

In purchasing compounded feeds not only the content of crude fat and crude protein but the materials from which they are derived should receive careful consideration. An examination of Table II will show that weed seeds which are undoubtedly an undesirable material for feeding contain relatively large amounts of crude fat and crude protein and hence it would be possible to prepare a compounded feed having appreciable amounts of the feeding ingredients by using a small amount of some concentrate such as cotton seed meal, linseed meal, etc., and a large amount of screenings consisting principally of weed seeds. In addition, the question whether there is danger of spreading noxious weeds through the use of feeds containing weed seeds demands attention, since experiments have shown that the viability of weed seeds is extremely difficult to destroy though it can probably be accomplished by fine grinding and high heat.

The materials used in this class of feeds are so varied that in the summary Table VI we have divided it into 12 headings and in Table IX have made four divisions.

POULTRY AND SCRATCH FEEDS

These feeds consist of various whole seeds, cracked grains of cereals, and mill by-products, and are often reinforced with bone, beef scraps, dried blood, linseed meal, cotton seed meal and alfalfa meal. Many of them, especially the scratch feeds, contain limestone grit, oyster shells and charcoal. Of the 118 samples analyzed 41 were deficient in crude fat, 55 in crude protein and 25 in both crude fat and crude protein. The average composition and selling price per ton of samples taken during the first period were 3.1 per cent. crude fat, 10.6 per cent. crude protein and \$41.26, and for the second period 3.4 per cent. crude fat, 11.5 per cent. crude protein and \$40.82. Range in price \$29.40 to \$80 and \$20 to \$60.

CONDIMENTAL AND MEDICATED STOCK AND POULTRY FEEDS

These are mixtures having as a filler or diluent some ordinary feeding stuff or some of the materials classed as fillers, various offals, herbs, condiments and drugs such as mustard hulls, pea hulls, bean hulls, grain screenings, flax plant offal, cob meal, dried peat, salt, pepper, ginger, anise seed, fenugreek, gentian, charcoal, copperas, Epsom salts, Glaubers salts, saltpeter, antimony sulfid, sulfur, etc. In addition the poultry feeds often contain bone, grit, Venetian red, hematite and dried paint.

Of the 15 samples of registered stock feeds analyzed ten were deficient in crude fat, seven in crude protein, and four in both crude fat and crude protein. The average composition and selling price per ton of the

samples were 6.2 per cent. crude fat, 20.4 per cent. crude protein and \$235.34. Range in price \$100 to \$500. The average composition and selling price per ton of 12 samples of unregistered stock feeds were 3.7 per cent. crude fat, 14.4 per cent. crude protein and \$246.51.

Of nine samples of registered poultry feeds analyzed four were deficient in crude fat, two in crude protein and two in both crude fat and crude protein. The average composition and selling price per ton of the samples were 5.3 per cent. crude fat, 23.4 per cent. crude protein and \$200. The average composition and selling price per ton of seven unregistered brands were 3.8 per cent. crude fat, 12.4 per cent. crude protein and \$315.71.

Details of the analysis and microscopical inspection of these samples are given in Tables VII and VIII and while it is not claimed that all the materials used in the various brands have been identified those present in largest amount and constituting the bulk of the mixture are given. Not only do the registered brands contain a larger percentage of the feeding ingredients but a careful study of the materials identified will show that the claims of some manufacturers that compliance with the Feeding Stuff Law would result in the disclosure of valuable trade secrets *are not well founded*. Dealers selling these preparations are particularly requested to note the preceding as it removes any possible excuse for violation of the law through the selling of unregistered materials.

Consumers desiring to use condimental or medicated feeds are advised to purchase only such as are properly guaranteed and labeled according to law giving full information as to composition and materials used. It should be noted that fillers such as granulated blood, linseed meal, flaxseed meal, cotton seed meal, etc., are much more valuable in every way than grain screenings, dried peat, cob meal, etc., and while authorities agree that the purchase of this class of feeds is not profitable, if they are to be used the filler in the mixture should receive consideration.

An extended investigation of the condimental feeds, condition powders and similar materials on the Indiana market is now in progress the results of which will be published as soon as the investigation is completed.¹¹

COMMENTS OF MANUFACTURERS REGARDING SAMPLES

Dec. 16, 1908. Mayflower Mills state that screenings found in sample C 1900 were used without knowledge that it was a violation of the law and that their use would be promptly discontinued.

Dec. 16, 1908. Home Mill & Grain Co., states that sample C 1999 is not representative as it was taken just after a heavy feed of screenings had been turned on to the screenings roll, after having been cut out several hours, thus making the sample contain a larger proportion of screenings than it should.

Dec. 19, 1908. George Steckley states that feed represented by sample C 1851 was purchased from the Goshen Milling Co., Goshen, Ind.

Feb 3, 1909. Indiana Milling Co., states that screenings found in sample C 2276 was in bran purchased from other mills as no screenings are used in the feeds manufactured by them.

¹¹Those wishing more extended information on the composition and use of Condimental Feeds are referred to the bulletins of the following stations: Wisconsin No. 151, Iowa No. 87, Massachusetts No. 106, New Jersey No. 184, Pennsylvania No. 70 and Canadian Laboratory of Internal Revenue No. 116.

Feb. 4, 1909. Washburn-Crosby Co., by W. G. Crocker, states that weed seeds found in sample C 2305 are only such as could not be separated from the wheat in cleaning. That all the screenings possible are removed and that no screenings are ground into any of their by-products.

Feb. 6, 1909. Southwestern Milling Company states that no screenings were ground into sample C 2452 and that foreign materials reported are only such as could not be separated.

Feb. 22, 1909. Martinsville Milling Co. states that sample C 2087 is not representative of the feed of their manufacture on account of being taken shortly after the mill was started following a shut down of three weeks.

Feb. 16, 1909. H. B. Hills states that feed represented by sample C 2556 was purchased from W. J. Nodine, Waterloo, Ind.

Mar. 4, 1909. Neill & Van Valer state that screenings reported in sample C 2584 were not ground and added to the bran as screenings are never added to their products and the presence of screenings could only be explained as due to siftings from the sweeping of upper bins.

Mar. 8, 1909. A. H. Boelter states that buckwheat in sample C 2059 was not added to the feed and explains its presence as due to the fact that all the feed is ground with the same machinery without cleaning and the buckwheat found was what remained in the mill from previous grinding.

Mar. 17, 1909. O. L. Brown states that corn bran found in sample C 2483 must have been due to carelessness on the part of attaches of the mill as no corn bran is intentionally added to the feed.

Mar. 19, 1909. Edwin Ellis states that no oats, wild buckwheat or weed seeds are used in feed represented by sample C 2442 and explains their presence as probably due to the fact that the car in which his raw material was received was previously loaded with oats.

Mar. 18, 1909. F. P. Buck states that the feed represented by sample C 4019 was purchased from the W. A. Coombs Milling Co., Coldwater, Mich.

April 7, 1909. Cayuga Milling Company states that sample C 2768 is not a representative sample of the feed owing to it having been taken from a very small quantity and after an extended shut down.

June 24, 1909. Darling & Company state that feed represented by sample C 3005 has been returned to them by P. O. Schultz from whom sample was obtained.

Oct. 26, 1909. W. C. Hall Milling Company states that feed represented by sample C 3280 is not of their manufacture but was purchased from outside the state on account of shortage in home supply and sold under their tag.

Oct. 29, 1909. North West Mills Co., states that samples C 2281 and 3381 were purchased the previous season from the first lot of chicken feed manufactured and that owing to the discovery that the machinery installed would not separate the noxious weed seeds the sale of the chicken feed had been discontinued and would not be resumed until improved methods of separation were perfected. The company states further that no shipments had been made into Indiana for five months preceding above date.

Nov. 8, 1909. C. Cable states that sample C 3416 is not representative because taken immediately after the resumption of grinding following a three month's shut down.

Nov. 12, 1909. Flack Bros. state that feed represented by sample C 3577 was purchased from the Star & Crescent Milling Co., Chicago, Ills.

Nov 15, 1909. Paul E. Raasch states that feed represented by sample C 3612 was some that had been in stock for over six months and that the balance of the shipment would be promptly withdrawn from sale.

EXPLANATION OF TABLES

Table I contains the average composition, digestible, nutrients and fertilizing ingredients of 65 materials commonly used in feeding stuffs as compiled by various authorities.

Table II contains the average composition of 173 representative samples collected and analyzed by this department.

Table III contains the average coefficients of digestion as determined by numerous feeding experiments and compiled by various authorities.

Table IV contains the average weight of one quart of 94 of the materials collected and analyzed for Table II.

Table V contains the average composition of samples of materials which are often used as adulterants as collected and analyzed by this department.

Table VI contains a summary of the results of inspection from July 1, 1908 to January 1, 1910 as compiled from details given in Tables VII and VIII. The summaries for samples collected to July 1, 1909 are marked with a * and those collected from July 1, 1909 to January 1, 1910 with a **.

Table VII contains the details regarding samples secured and analyzed from July 1, 1908 to July 1, 1909.

Table VIII contains the details regarding samples secured and analyzed from July 1, 1909 to January 1, 1910.

In Tables VII and VIII the samples are classified under the materials which they are guaranteed to contain and the presence of any adulterants or other materials is noted in the column headed "Remarks."

In Tables VII and VIII the results in the found column of samples showing a deficiency of 0.25 per cent. in crude fat or 1 per cent. in crude protein or a deficiency in both crude fat and crude protein are printed in bold face type.

Under the heading "Principal Ingredients Identified Under Microscope" in Tables VII and VIII it is not intended to assert that the materials noted are all that the samples contain but that they are the ones constituting the bulk of the feed and are present in such quantities as to be capable of identification.

Table IX contains a complete list of all registered feeds on sale up to and including April 1, 1910. For the convenience of consumers the feeding stuffs have been divided into 21 classes, covering all the more important feeds offered for sale in Indiana.

Table X contains a list of the 498 Indiana flour mills in operation in 1909, their capacities and output. In nearly all cases the figures given are those received from the companies but where such information was not available they are based on the estimates of our inspectors.

Inasmuch as it is hardly considered advisable to publish definitions and the entire list of registrations each year future reports will, in all probability, contain only the changes and new registrations made for the fiscal year represented by the report. Consumers should retain this bulletin for future reference.

TABLE VII.—Report of Inspection of Feeds Collected, July 1, 1908 to July 1, 1909

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
WHEAT BRAN								
Acme Milling Co., The, Aurora, Ind. Wheat Bran..... Wheat Bran.....	971	1531	Aurora	3.7	3.7	14.1	15.1	Corn bran and corn cockle
	971	2961	Aurora.....	3.7	4.0	14.1	13.9	
Ahr & Singer, Monroeville, Ind. Wheat Bran.....	1506	2263	Monroeville.....	3.8	3.1	14.0	15.1	
Akin-Erskine Milling Co., The, Evansville, Ind. "Pure Winter Wheat Bran".....	35	1850	Evansville.....	3.1	3.6	15.6	13.8	Screenings
Alton Milling Co., Alton, Ind. Wheat Bran.....	1247	1510	Alton.....	3.8	3.9	14.0	14.5	Corn cockle
Amboy Milling Co., Amboy, Ind. *Bran	2312	2525	Amboy.....	3.5	3.3	13.0	14.7	
Amo Milling Co., Amo, Ind. Amo Milling Co.'s Wheat Bran.....	355	1680	Amo.....	3.0	3.5	14.0	14.9	Corn cockle and shrunken wheat
Anderson & Denzine, Kouts, Ind. Anderson & Denzine's Wheat Bran.....	433	2971	Kouts.....	3.7	3.9	14.0	14.2	
Anglemeyer, Jerry, Mt. Zion, Ind., Rochester R. R. 2 Anglemeyer's Wheat Bran.....	1135	2057	Mt. Zion.....	3.8	3.7	14.0	15.3	Corn cockle
Angola Flouring Mills, Angola, Ind. Angola Flouring Mills, Wheat Bran.....	1098	2567	Angola.....	3.8	3.6	14.0	15.1	
Auburn Roller Mills, M. E. Hursh, Auburn, Ind. Auburn Roller Mills Wheat Bran.....	776	2818	Auburn.....	3.8	3.6	14.0	14.4	
Augusta Mill Co., Augusta, Ind. Bran	539	1921	Augusta.....	3.8	3.8	14.0	14.6	
Ballard & Ballard Co., Louisville, Ky. Bran	1851	1687	Charlestown....	4.6	3.8	15.2	15.5	Screenings
Bran	1851	2490	South Boston..	4.6	4.1	15.2	14.7	
Barlow, C. M., Kokomo, Ind. Wheat Bran.....	178	2501	Kokomo.....	3.6	3.7	13.7	13.8	Corn cockle
Barnes & Company, R. J., Dunkirk, Ind. "Bran"	287	2542	Dunkirk.....	4.0	4.9	15.1	16.7	
Barrett Elevator Co., Greenfield, Ind. *Bran	2349	2662	Greenfield.....	3.5	3.9	14.0	15.8	
Batchelor, Fox & Davis, Sharpsville, Ind. Wheat Bran.....	345	2682	Sharpsville.....	3.8	4.1	14.0	14.7	
Beanblossom & Sons, D. B., Mauckport, Ind. Wheat Bran.....	1075	1513	Mauckport.....	3.8	4.0	14.0	15.9	Corn cockle
Becker Bros., Freetown, Ind. Becker Bros. Wheat Bran.....	1307	1574	Freetown.....	3.7	4.4	14.0	16.2	
Beckman Supply Co., The, Hammond, Ind. Wheat Bran.....	1347	1547	Hammond.....	3.0	5.2	12.0	15.4	Corn cockle

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Bergenroth Bros., Troy, Ind. Bergenroth's Wheat Bran-----	153	1457	Troy-----	3.8	4.3	14.0	15.0	Corn cockle
Bickhart, Chris. J., St. Paul, Ind. Up-to-date Wheat Bran-----	1662	1662	St. Paul-----	3.5	4.1	12.0	14.5	Corn cockle
Up-to-date Wheat Bran-----	1662	3067	St. Paul-----	3.5	4.4	12.0	15.1	
Blicker Bros., Hammond, Ind. Wheat Bran-----	1339	1589	Hammond-----	3.0	4.0	12.0	15.2	Corn cockle and wild buckwheat
Bleker, F. A., Crown Point, Ind. Wheat Bran-----	1301	1509	Crown Point-----	3.8	4.0	14.0	14.9	Corn cockle and wild buckwheat
Bluffton Milling Co., Bluffton, Ind. Wheat Bran-----	661	2292	Bluffton-----	3.9	3.9	14.0	16.9	
Bock, Leonard, Argos, Ind. Wheat Bran-----	550	2051	Argos-----	3.7	3.7	14.0	14.3	
Boelter, C. F., Union Mills, Ind. Boelter's Wheat Bran-----	920	1996	Union Mills-----	3.8	3.5	14.0	14.0	
Boonville Milling Co., Boonville, Ind. Boonville Milling Company's Wheat Bran-----	929	2319	Boonville-----	3.7	3.9	14.0	14.4	
Boston Milling Co., Eckerty, Ind. Babbitt's Wheat Bran-----	806	2839	Eckerty-----	3.7	4.8	14.0	14.7	Corn cockle
Bourbon Elevator & Milling Company, Bourbon, Ind. Bourbon Bran-----	165	2029	Bourbon-----	3.8	3.2	14.0	15.0	
Bridgeton Roller Mills, Bridgeton, Ind. Wheat Bran-----	642	2751	Bridgeton-----	3.8	4.4	14.0	15.9	
Wheat Bran-----	642	2752	Bridgeton-----	3.8	4.0	14.0	17.1	Cheat, corn cockle and small wheat grains, screenings
Bristol Milling Co., Bristol, Ind. Wheat Bran-----	2150	1844	Bristol-----	3.8	3.9	13.0	13.8	
Broadway Mills, Vincennes, Ind. Wheat Bran-----	300	2036	Vincennes-----	3.7	3.5	14.0	14.5	
Brose & Arnold, Evansville, Ind. Bran-----	191	1970	Evansville-----	3.7	3.8	14.0	15.2	
Brose, Geo., Evansville, Ind. Bran-----	962	1976	Evansville-----	3.2	4.9	15.7	15.3	
Brudi & Co., Jos., New Haven, Ind. Wheat Bran-----	565	2247	New Haven-----	3.8	3.8	14.0	15.5	
Buck, F. P., Pleasant Lake, Ind. Wheat Bran-----	1708	2560	Pleasant Lake-----	3.7	3.9	14.0	14.1	Buckwheat hulls, chaff and corn cockle
Bunker Hill Milling Co., Evansville, Ind. Wheat Bran-----	706	1974	Evansville-----	3.8	4.0	14.0	14.5	Corn cockle and cheat
Burge Milling Co., Marion, Ind. Burge Milling Co.'s Wheat Bran-----	229	2333	Marion-----	3.1	3.5	14.0	14.9	
Burrell & Morgan, Elkhart, Ind. Bran-----	253	1819	Elkhart-----	3.8	3.8	14.0	14.9	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official Inspection C.		Guaranteed	Found	Guaranteed	Found	
Butler Milling Co., Butler, Ind. Butler Milling Co.'s Wheat Bran.....	1029 2819	Butler.....	3.8	4.1	14.0	15.8	
Canaan Milling Co., Canaan, Ind. Wheat Bran.....	1265 2900	Canaan.....	3.8	4.0	14.0	14.2	
Wheat Bran.....	1265 2900	Canaan.....	3.8	4.2	14.0	14.4	
Cadick Milling Co., Grandview, Ind. Wheat Bran.....	187 1466	Grandview.....	3.8	3.9	14.0	14.8	Corn cockle, chent, screenings
Carlisle Mill & Elevator Co., Carlisle, Ind. Wheat Bran.....	790 2696	Carlisle.....	3.7	3.9	14.0	14.3	
Carpenter, B. O., Perrysville, Ind. "Wheat Bran".....	344 2772	Perrysville.....	3.8	3.6	14.0	13.6	
Cauble & Dunlevy, Henryville, Ind. Bran	1234 1632	Henryville.....	3.8	4.2	14.0	15.2	Corn cockle
Bran	1234 2878	Henryville.....	3.8	3.9	14.0	14.5	
Cauble, O. L., Pekin, Ind. Wheat Bran.....	1018 1867	Pekin.....	3.8	3.5	14.0	14.4	
Wheat Bran.....	1018 2866	Pekin.....	3.8	3.7	14.0	14.5	
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Wheat Bran.....	421 1464	Cayuga.....	3.8	3.9	14.0	16.2	
Cayuga Milling Co.'s Wheat Bran.....	421 2768	Cayuga.....	3.8	3.8	14.0	13.7	
Champion Roller Milling Co., Richmond, Ind. Wheat Bran.....	146 3416	Richmond.....	3.9	3.9	12.0	15.4	
City Mills, Huntington, Ind. City Mills Wheat Bran.....	1811 2190	Huntington.....	3.8	3.7	14.0	14.6	
Clark & Sons, C. G., Rushville, Ind. Clark's Wheat Bran.....	188 1667	Rushville.....	3.7	4.1	14.0	15.6	Corn cockle
Clayton Milling Co., Clayton, Ind. Clayton Wheat Bran.....	2115 2583	Clayton.....	3.7	3.8	14.1	15.5	
Coal City Milling Co., Coal City, Ind. Coal City Milling Co.'s Wheat Bran.....	521 2444	Clay City.....	4.0	4.2	14.0	14.5	
Cook & Boyd, Richmond, Ind. Wheat Bran.....	833 2421	Richmond.....	3.7	3.7	12.0	14.6	
Cook & Co., W. A., Marengo, Ind. Cook's Wheat Bran.....	945 2844	Marengo.....	3.7	4.7	14.0	16.8	
Coppes, Zook & Mutschler Co., Nappanee, Ind. Bran	357 1943	Shipshewanna.....	3.9	3.9	15.6	14.8	Wild buckwheat and chaff
Corydon Milling Company, The, Corydon, Ind. The White Mill Wheat Bran.....	100 1486	Corydon.....	3.8	3.6	14.0	14.3	
Crandal, L. W., Fremont, Ind. Wheat Bran.....	1653 2553	Fremont.....	3.8	4.0	14.0	14.0	Corn cockle
Dair Brothers, West Harrison, Ind. Dair's Wheat Bran.....	1068 3042	Harrison, O.....	3.8	3.8	14.0	14.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Daisy Roller Mills, Brookville, Ind. Wright's Wheat Bran.....	401	3041	Brookville	3.7	3.9	14.0	14.8	
Daniels, Milo S., North Webster, Ind. Wheat Bran.....	1582	2021	North Webster.....	3.8	3.4	14.0	14.2	
Daniels & Pickering Co., Middletown, Ind. Daniel's Wheat Bran.....	104	2408	Middletown.....	3.2	3.1	12.0	14.1	
Davis & Johnson, Coatsville, Ind. Davis & Johnson's Wheat Bran.....	439	2807	Coatsville.....	3.8	4.0	14.1	15.3	
Deck, James M., Roann, Ind. Pure Winter Wheat Bran.....	195	2064	Roann.....	3.7	3.7	14.0	15.4	
Dilger Bros., Mariah Hill, Ind. Dilger Bros.' Wheat Bran.....	33	1881	Mariah Hill.....	3.8	2.6	14.0	14.1	
Donmeyer Gardner Co., Peoria, Ill. *Wheat Bran.....	2611	2783	Covington.....	4.0	4.4	14.0	18.4	
Drake, Otis, The Bowling Green Mills, Bowling Green, Ind. Wheat Bran.....	1203	1742	Bowling Green.....	3.8	4.4	14.0	15.7	
Dyer Milling Company, Dyer, Ind. Wheat Bran.....	1255	1800	Dyer.....	3.0	3.8	14.0	16.5	
Eberts & Bro., Charlestown, Ind. "Bran"	2014	1624	Charlestown.....	3.9	4.0	14.1	14.6	Corn cockle
Eberts & Bro., Jeffersonville, Ind. "Bran"	242	1606	Jeffersonville.....	3.9	4.3	14.1	14.5	Corn cockle
Elnora Milling Co., The, Elnora, Ind. Wheat Bran.....	383	2071	Elnora.....	3.1	3.8	14.5	14.5	
Enterprise Mill Co., The, Bicknell, Ind. Enterprise Wheat Bran.....	407	2710	Bicknell.....	3.8	3.6	14.0	15.1	
Etna Lumber, Grain & Milling Co., Etna Green, Ind. Winter Wheat Bran.....	289	2611	Etna Green.....	3.8	4.3	14.0	14.3	
Ewing Mill Co., The, Brownstown, Ind. Ewing Mill Co.'s Wheat Bran.....	297	1572	Brownstown.....	3.8	4.0	14.0	14.9	Corn cockle
Farmers Feed Store, Borden, Ind. Wheat Bran.....	1093	2479	Borden.....	3.8	4.6	14.0	16.5	Screenings
Farmland City Flour Mills, The, Farmland, Ind. Wheat Bran.....	1659	2555	Farmland.....	3.8	3.4	14.0	16.0	
Fette, Nicholas H., New Alsace, Ind. Wheat Bran.....	486	3047	New Alsace.....	3.7	3.6	14.0	14.7	
Flack Bros., East Chicago, Ind. Wheat Bran.....	1381	1551	East Chicago.....	3.5	4.1	12.0	15.4	Cracked corn, corn cockle and wild buckwheat
Wheat Bran.....	1381	2800	East Chicago.....	3.5	4.3	12.0	16.4	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official Inspection C.		Guaranteed	Found	Guaranteed	Found	
Flat Rock Cave Mills, R. R. No. 3, Shelbyville, Ind. Wheat Bran.....	1350 2863	Shelbyville.....	3.8	4.1	14.0	14.7	Corn cockle
Flater, Joda, Alfordsville, Ind. Joda Flater Wheat Bran.....	576 1692	Alfordsville.....	3.7	3.7	14.0	15.1	Corn cockle
Fornax Roller Mills, Decatur, Ind. Fornax Bran.....	922 2206	Decatur.....	3.7	3.7	14.0	15.2	
Forrest Park Mills, Terre Haute, Ind. Wheat Bran.....	1776 2283	Elsworth.....	3.8	4.0	14.0	14.2	
Fort Branch Mill Co., Fort Branch, Ind. Fort Branch Mill Co., Pure Wheat Bran.....	556 2025	Fort Branch.....	3.7	4.1	14.0	15.3	
Fortville Milling Co., Fortville, Ind. Fortville Milling Co.'s Bran.....	1232 2297	Fortville.....	3.8	4.1	14.0	16.0	Corn cockle
Friendship Milling Co., Friendship, Ind. Wheat Bran.....	969 1536	Friendship.....	3.8	4.2	14.0	14.5	
Wheat Bran.....	969 2058	Friendship.....	3.8	3.8	14.0	13.7	
Fromme & Co., H., Terre Haute, Ind. Wheat Bran.....	1790 2184	Terre Haute.....	3.4	3.7	13.2	16.9	
Frye, Joseph, Middletown, R. F. D. No. 2, Ind. Frye's Wheat Bran.....	646 2377	Middletown.....	3.2	3.6	12.0	13.9	
Fuhrer-Ford Milling Co., Mt. Vernon, Ind. *Pure Wheat Bran.....	622 2312	Mt. Vernon.....	3.7	3.8	14.0	14.8	Screenings
Fyke Milling Co., La Grange, Ind. Wheat Bran.....	1814 1888	LaGrange.....	3.8	3.8	14.0	14.5	
Wheat Bran.....	1814 2077	LaGrange.....	3.8	3.9	14.0	14.0	Corn cockle
Gandy & Co., O., South Whitley, Ind. Wheat Bran.....	1475 1934	South Whitley.....	3.8	3.9	14.0	15.7	
Garland Milling Company, The, Greensburg, Ind. Garland Bran.....	197 2258	Greensburg.....	3.7	4.1	14.1	14.4	Screenings
Geneva Milling & Grain Company, Geneva, Ind. Miller's Wheat Bran.....	157 2457	Geneva.....	3.8	3.3	14.0	15.2	
Gilman, S. B., Summitville, Ind. Gilman's Wheat Bran.....	543 2619	Summitville.....	3.7	3.7	14.0	14.5	
Globe Mills, The, Ft. Wayne, Ind. The Globe Mills Wheat Bran.....	426 1806	Ft. Wayne.....	3.8	3.2	14.0	15.1	
Goshen Milling Company, The, Goshen, Ind. Bran.....	66 1816	Goshen.....	3.7	3.8	15.4	14.5	Screenings
Bran.....	66 1817	Elkhart.....	3.7	3.7	15.4	14.9	Screenings
Bran.....	66 2127	Goshen.....	3.7	4.1	15.4	15.6	Cheat and corn cockle
Bran.....	66 2098	New Paris.....	3.7	4.4	15.4	14.8	Screenings
Gotto, O. W., Michigan City, Ind. Wheat Bran.....	1283 1634	Michigan City.....	3.5	4.0	14.0	16.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Inspection C.	Official		Guaranteed	Found	Guaranteed	Found	
Graft Bros., Winchester, Ind. Graft Bros.' Wheat Bran.....	1182	1784	Winchester.....	3.8	3.7	14.0	15.4	Corn cockle
Guyatt, Wm., Knox, Ind. Wheat Bran.....	27	1993	Knox.....	3.8	3.3	14.0	15.7	
Hall Milling Co., W. C., Brazil, Ind. Hall's Wheat Bran.....	412	2199	Brazil.....	3.8	2.8	14.0	13.6	
Hampton, W. D., Worthington, Ind. Wheat Bran.....	1124	1738	Worthington.....	3.8	3.8	14.0	15.4	Corn cockle
Hanover Mills, Hanover, Ind. Wheat Bran.....	1280	1490	Hanover.....	3.7	3.6	14.0	14.2	Screenings
	1280	2033	Hanover.....	3.7	3.4	14.0	13.6	
Harbeck, Wm., Valparaiso, Ind. Wheat Bran.....	1408	1658	Valparaiso.....	3.8	4.9	14.0	14.5	Corn cockle
Hardinsburg Milling Co., Hardinsburg, Ind. Hardinsburg Milling Co.'s Wheat Bran.....	423	2409	Hardinsburg.....	3.7	3.9	14.0	14.6	
Hawk Bros.' Milling Co., Mongo, Ind. Wheat Bran.....	1819	2384	Mongo.....	3.8	3.8	14.0	14.5	Corn cockle
Hawk & Wisman, Angola, Ind. Hawk & Wisman's Wheat Bran.....	1073	2563	Angola.....	3.8	3.8	14.0	14.0	
Haysville Milling Company, Haysville, Ind. Haysville Milling Company's Wheat Bran.....	847	1877	Haysville.....	3.7	3.7	14.0	15.2	
Heaton & Co., E. H., Indianapolis, Ind. Wheat Bran.....	740	2146	Indianapolis.....	3.7	4.5	14.0	15.3	
Heckman, Charles, Decatur, Ind. Wheat Bran.....	942	2207	Decatur.....	3.8	3.1	14.0	14.7	
Helse Bros. & Co., Orleans, Ind. Wheat Bran.....	941	2474	Orleans.....	3.8	3.8	14.0	15.2	
Heltschmidt, A. C., Michigan City, Ind. Wheat Bran.....	1329	1037	Michigan City.....	3.8	4.7	14.0	15.5	Corn cockle
Hendry & Bassett, Angola, Ind. Wheat Bran.....	1635	2668	Angola.....	3.8	5.3	14.0	15.3	Cheat, chaff, wild buckwheat
Hibblits Mill Company, Muncie, Ind. Wheat Bran.....	529	2608	Muncie.....	3.8	3.7	14.0	15.3	
High Street Milling Co., Muncie, Ind. High Street Milling Company's Wheat Bran.....	970	2607	Muncie.....	4.0	3.6	15.4	13.8	
Hill, Peter, Sandborn, Ind. Wheat Bran.....	613	2712	Sandborn.....	4.0	3.1	15.4	14.8	
Hill, Thos. J., South Bend, Ind. Wheat Bran.....	981	1809	South Bend.....	3.8	4.8	14.0	16.9	Corn cockle, chaff, wild buckwheat
Hills, H. B., Fremont, Ind. Wheat Bran.....	1653	2554	Fremont.....	3.8	4.1	14.0	15.2	Corn cockle, cracked corn

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Holland Mills, The, Holland, Ind. *Bran	2154	1926	Holland	3.5	3.5	13.0	14.3	Corn cockle
Holton Milling Co., Holton, Ind. Wheat Bran	408	2386	Holton	3.7	4.3	14.0	14.3	
Home Mill & Grain Co., Mt. Vernon, Ind. Home Mill & Grain Co.'s Wheat Bran	689	1909	Mt. Vernon	3.8	3.1	14.4	14.3	Screenings
Hornung, J. M., Greensburg, Ind. Wheat Bran	417	2263	Greensburg	3.7	3.8	14.1	14.9	
Hosmer, Otis I., Doolittle Mills, Ind. Otis I. Hosmer Wheat Bran	1529	1523	Doolittle Mills	3.7	3.1	14.0	14.1	Corn cockle
Hunter Bros.' Milling Co., St. Louis, Mo. Pure Wheat Bran	381	1796	Lafayette	3.5	4.0	14.0	18.1	
Pure Wheat Bran	381	1802	Martinsburg	3.5	3.8	14.0	18.7	
Pure Wheat Bran	181	2376	Middletown	3.5	4.1	14.0	16.1	Screenings
Huntington Mill Co., Huntington, Ind. Bran	491	2197	Huntington	3.6	3.4	14.3	14.4	
Igleheart Bros., Evansville, Ind. Igleheart's Bulk Bran	113	1961	Evansville	4.0	3.9	15.0	14.9	
Jacobson, Soren, Young America, Ind. Jacobson Wheat Bran	386	2220	Young America	3.8	3.4	14.0	13.8	
Jones & Long, Wabash, Ind. Wheat Bran	479	2162	Wabash	3.8	4.1	14.0	15.5	
Kamman, Frank W., Cross Plains, Ind. Bran	2360	2968	Cross Plains	3.8	4.3	14.0	14.3	
Kannapel Milling Co., New Middleton, Ind. Kannapel's Wheat Bran	1243	1497	New Middleton	3.7	3.1	14.0	13.2	Corn cockle, screenings
Keene, A. C. Elkhart, Ind. A. C. Keene's Wheat Bran	1223	2578	Elkhart	3.8	3.8	14.0	14.5	Corn cockle, mill sweepings
Kellman Kimmet Co., The, Lowell, Ind. Wheat Bran	1373	1593	Lowell	3.5	4.6	12.0	14.2	Corn cockle, wild buckwheat
Wheat Bran	1373	3010	Lowell	3.5	4.2	12.0	16.0	
Kellman & Lowenberg, Dyer, Ind. Wheat Bran	1414	1595	Dyer	3.5	4.0	14.0	16.6	
Kemper Mill & Elevator Co., Kansas City, Mo. Anchor Bran	2053	1717	Bloomfield	4.0	4.4	14.5	17.9	
Kennedy Milling Co., Geo. W., Shelbyville, Ind. Bran	2387	2850	Shelbyville	3.5	3.6	13.5	13.9	Screenings
Kepflinger, Charles, Zanesville, Ind. Bran	843	2241	Zanesville	4.0	3.7	14.0	15.1	
Kidder, Willard, Terre Haute, Ind. Winter Wheat Bran	98	2182	Terre Haute	3.5	3.9	14.0	14.0	

*—Before registration

**—Not registered

TABLE VII. — Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection		Guaranteed	Found	Guaranteed	Found	
Klondike Milling Company, The, Danville, Ind. Wheat Bran.....	274	2328	Danville	3.7	4.2	14.4	16.2	
Knoblock & Ginz Milling Co., South Bend, Ind. Wheat Bran.....	1025	1801	South Bend	3.8	3.7	14.0	14.8	
Wheat Bran.....	1025	2914	Wheatfield	3.8	4.4	14.0	14.6	
Kriwitz Bros., Kendallville, Ind. Kriwitz Wheat Bran.....	1043	1846	Kendallville	3.8	4.1	14.0	16.1	
Krome & Co., H. H., Batesville, Ind. Krome's Wheat Bran.....	163	1682	Batesville	3.8	3.6	14.0	14.0	Screenings
Kuhn & Co., John H., Michigan City, Ind. Wheat Bran.....	1643	1645	Michigan City	3.0	3.8	14.0	16.3	Screenings
Landis Brower & Co., Flora, Ind. Brower's Wheat Bran.....	657	2801	Flora	3.8	4.3	14.0	14.7	
Lawrenceburg Roller Mills Co., The, Lawrenceburg, Ind. "Snowflake" Bran.....	12	1526	Aurora	3.8	3.9	14.0	14.0	Screenings
"Snowflake" Bran.....	12	1527	Lawrenceburg	3.8	4.0	14.0	14.9	Corn cockle, cheat
Leesburg Grain & Milling Co., The, Leesburg, Ind. Wheat Bran.....	305	2032	Leesburg	3.8	3.8	14.0	14.3	
Lewis Milling Co., Lewis, Ind. Wheat Bran.....	540	2743	Lewis	3.8	4.6	14.0	15.9	
Ligonier Milling Co., Ligonier, Ind. Ligonier Milling Co.'s Wheat Bran.....	379	1829	Ligonier	3.8	4.0	14.0	15.0	Corn cockle, cheat
Lindauer, Ferd, Fulda, Ind. Wheat Bran.....	1036	1479	Fulda	3.8	4.3	14.0	14.4	Corn cockle, excessive amount
Lingeman & Adams, Brownsburg, Ind. Bran.....	1469	2647	Brownsburg	3.8	3.8	14.0	16.0	
Little Crow Milling Co., Warsaw, Ind. Little Crow Wheat Bran.....	360	1947	Warsaw	3.8	3.9	14.0	14.6	Corn cockle
Long, John C., Long's Mill R. F. D. No. 2, Chesterton, Ind. Wheat Bran.....	1496	1628	Chesterton	3.8	3.5	14.0	15.5	Corn cockle
Lynn Mill & Elevator Co., Lynn, Ind. Wheat Bran.....	1987	1502	Lynn	3.5	3.5	13.5	15.6	Corn cockle
Wheat Bran.....	1987	2830	Lynn	3.5	3.9	13.5	14.4	
Wheat Bran.....	1987	3036	Lynn	3.5	4.3	13.5	14.9	
Lyons Mill & Elevator Co., Lyons, Ind. Reliable Wheat Bran.....	573	1734	Lyons	3.7	3.8	14.0	14.3	Corn cockle
Macy Milling Co., Macy, Ind. Wheat Bran.....	710	2058	Macy	3.7	3.7	14.0	15.4	Corn cockle
Maginot, Mike, Hammond, Ind. Wheat Bran.....	1844	1546	Hammond	3.0	4.9	12.0	15.5	Corn cockle, wild buck wheat, screenings
Manja, Charles, Kingsbury, Ind. Wheat Bran.....	1068	3042	West Harrison	3.8	3.9	14.0	14.1	

*—Before registration

**—Not registered

†—Not tagged

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Martin, Martin & Co., New Castle, Ind. Martin, Martin & Co.'s Wheat Bran.....	219	2383	New Castle.....	3.2	3.0	12.0	14.6	Corn cockle
Martinsville Milling Co., The, Martinsville, Ind. Wheat Bran.....	31	2089	Martinsville ..	3.0	3.4	14.0	15.2	Corn cockle
Maxville Roller Mills, Maxville, Ind., R. No. 18, Farmland Wheat Bran.....	1724	1773	Maxville.....	3.8	3.6	14.0	15.1	
Mayflower Mills, Ft. Wayne, Ind. Mayflower Mills Wheat Bran.....	450	1900	Ft. Wayne.....	3.8	4.4	14.0	14.5	Screenings
Means & Witt, Lebanon, Ind. Wheat Bran.....	85	2224	Lebanon	3.5	4.0	14.0	14.6	
Medaryville Milling Company, Medaryville, Ind. Medaryville Wheat Bran.....	171	3014	Medaryville ..	3.8	4.1	14.0	13.8	
Mexico Milling Co., The, Mexico, Ind. Wheat Bran.....	144	1857	Mexico	3.8	3.5	14.0	14.8	Corn cockle
Mid Continent Mills, Topeka, Kansas. Winter Wheat Bran.....	1829	2254	Indianapolis ..	4.0	4.1	15.0	16.4	Screenings
Winter Wheat Bran.....	1829	2738	Boswell	4.0	4.2	15.0	16.2	Chaff
Middlebury Milling Co., Middlebury, Ind. Wheat Bran.....	631	1831	Middlebury ..	3.8	3.9	14.0	13.9	
Miller, A. E., New Marlon, Ind. A. E. Miller's Wheat Bran.....	596	2892	New Marlon....	3.8	4.1	14.0	14.7	
Miller & Dohner, Columbia City, Ind. Bran	1027	1931	Columbia City	3.8	3.8	14.0	15.0	
Monroe Grain, Hay & Milling Co., Monroe, Ind. Wheat Bran.....	2190	2455	Monroe	3.8	3.3	14.0	16.4	Chaff
Moscow Roller Mills, Moscow, Ind. Wheat Bran.....	1634	1668	Moscow	3.7	3.5	14.1	14.5	Corn cockle
Wheat Bran.....	1634	3068	Moscow	3.7	3.8	14.1	13.9	
Moyer, W. H., Cory, Ind. W. H. Moyer's Wheat Bran.....	1151	2445	Cory	3.5	3.5	14.0	14.4	
Mueller & Sons, Peter, Ferdinand, Ind. Wheat Bran.....	645	1884	Ferdinand	3.7	3.7	14.0	14.2	Corn cockle, chaff, screenings
Munkelt, Henry R., Salem, Ind. Wheat Bran.....	887	2492	Salem	3.8	3.9	14.0	14.2	
Murray Bros., Spencerville, Ind. Wheat Bran.....	609	2809	Spencerville ..	3.8	3.2	14.0	15.5	
Myers & Hartsock, Wilmot, Ind. Wheat Bran.....	1579	2018	Wilmot	3.8	3.4	14.0	14.2	Corn cockle
McCann Milling Co., Connersville, Ind. Wheat Bran.....	2461	3057	Connersville ..	3.2	4.1	12.0	16.3	Corn cockle
McDill Milling Co., The, College Corner, Ind. *McDill's Pure Wheat Bran.....	432	1660	College Corner	3.8	3.8	14.0	15.0	Corn bran

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
McMurtry & Walther, Marshall, Ind. McMurtry & Walther Wheat Bran.....	1672	2759	Marshall	3.7	4.4	14.0	14.7	
McNely, Thos. N., Walkerton, Ind. Wheat Bran.....	1448	2013	Walkerton	3.8	3.5	14.0	14.0	
Neill & Van Valer, Jonesboro, Ind. Wheat Bran.....	763	2584	Jonesboro	3.8	4.2	14.0	14.2	Screenings
Nesbit & Co., I. A., Sullivan, Ind. Wheat Bran.....	861	2699	Sullivan	4.0	3.7	15.4	13.1	
New Carlisle Milling Co., New Carlisle, Ind. Wheat Bran.....	1316	1790	New Carlisle..	3.9	3.8	14.0	14.5	
Niccum-Henley Co., Swayzee, Ind. Niccum-Henley Co.'s Wheat Bran.....	758	2359	Swayzee	3.7	4.1	14.0	15.4	
Niccum-Henley Co.'s Wheat Bran.....	759	3029	Swayzee	3.7	4.3	14.0	15.4	Corn cockle
Niccum & Russel, Kimmel, Ind. Wheat Bran.....	1789	1471	Kimmel	3.8	4.0	14.0	15.6	Corn cockle
Niezer & Co., Monroeville, Ind. Wheat Bran.....	1509	2260	Monroeville ..	3.8	4.3	14.0	14.0	Corn bran
North Manchester Milling Co., N. Manchester, Ind. "North Manchester Milling Company's Bran"	867	2218	N. Manchester	3.8	3.8	14.0	14.7	
Pancost Milling Co., Elkhart, Ind. "Bran"	799	1825	Elkhart	3.0	3.9	14.0	16.0	
Paoli Milling Co., The, Paoli, Ind. Wheat Bran.....	696	2411	Paoli	3.0	4.0	12.0	14.9	
Pate, J. M., Cross Plains, Ind. Wheat Bran.....	841	1540	Cross Plains..	3.8	3.9	14.0	14.4	Cheat
Pendleton Milling Co., The, Pendleton, Ind. Wheat Bran.....	1480	3090	Pendleton	3.9	3.6	14.0	15.0	
Pennville Milling Co., Pennville, Ind. Wheat Bran.....	1696	2462	Pennville	3.8	3.8	14.0	15.0	
Peoples' Flouring Mills, Ashley, Ind. Huber's Wheat Bran.....	1216	2368	Ashley	3.8	3.8	14.0	14.9	
Perky Mills, The, Hamilton, Ind. Perky Mills' Bran.....	1714	2661	Hamilton.....	3.8	3.0	14.0	14.4	
Phoenix Flour Mill, Evansville, Ind. Phoenix Wheat Bran.....	124	1983	Evansville	4.4	4.3	16.2	15.1	Screenings
Pitman, E. L., Corydon, Ind. Pitman's Pure Wheat Bran.....	677	1491	Corydon	4.0	3.8	15.4	15.4	Corn cockle
Plant Milling Co., Geo. P., St. Louis, Mo. Bran	915	2472	Orleans	3.2	4.4	15.4	16.4	Corn cockle, cheat, wild buckwheat
Pressel, S. J., Hagerstown, Ind. Pressel's Wheat Bran.....	141	3062	Hagerstown ..	3.2	3.8	12.0	15.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Quickel, R. G., Hagerstown, Ind. Quickel's Wheat Bran.....	616	3087	Hagerstown ..	3.2	3.8	13.0	14.8	Corn cockle
Raasch, Paul E., Crown Point, Ind. Wheat Bran.....	1359	1599	Crown Point...	3.5	5.2	14.0	13.9	Screenings
Wheat Bran.....	1358	2953	Crown Point...	3.5	5.2	14.0	14.8	Screenings, chaff wild buckwheat, flax seed
Ray & Rice, Camden, Ind. Ray & Rice's Wheat Bran.....	611	2689	Camden	3.7	4.9	14.0	14.4	
Redden & Sons, New Paris, Ind. Redden's Pure Wheat Bran.....	974	1618	New Paris.....	3.8	3.1	14.0	13.8	Corn cockle
Wheat Bran.....	2118	2908	New Paris.....	2.0	3.2	11.0	13.6	Corn cockle
Redington & Morgan, Rolling Prairie, Ind. Wheat Bran.....	1278	1786	Rolling Prairie	3.8	3.8	14.0	13.6	
Richardson, Geo. L., Logansport, Ind. Wheat Bran.....	2146	2114	Logansport ...	3.8	3.8	14.0	13.8	
Richland Milling Co., Bloomfield, Ind. Wheat Bran.....	1149	1715	Bloomfield.....	3.5	3.6	14.0	14.7	Corn cockle
Richmond Roller Mills, Richmond, Ind. The Richmond Roller Mills Wheat Bran	482	2418	Richmond.....	3.2	4.4	12.0	15.3	
Riedel & Gray, Ossian, Ind. Wheat Bran.....	2005	1708	Ossian	3.6	3.7	14.0	15.0	
Rittenhouse, E. S., Liberty Mills, Ind. "Liberty Bird" Bran.....	373	2214	Liberty Mills..	3.7	3.7	14.0	14.0	
River Queen Mills, Rensselaer, Ind. Wheat Bran.....	1066	3007	Rensselaer ...	3.8	4.0	14.0	15.0	
Riverside Mill, The, Wolcottville, Ind. Riverside Mill's Bran.....	1620	1840	Wolcottville ..	3.8	3.2	14.0	14.8	Corn cockle, cheat screenings
Rochester Roller Mills, Rochester, Ind. *Bran.....	2170	2061	Rochester	3.8	3.4	14.0	14.1	
Roeske Bros., Michigan City, Ind. Wheat Bran.....	1467	1632	Michigan City..	3.8	3.8	14.0	16.7	Corn cockle
Rokowski, Alex., South Bend, Ind. Wheat Bran.....	1960	2666	South Bend....	3.8	5.0	14.0	14.6	Corn cockle, screenings
Rose Milling Co., Alfordsville, Ind. Bran.....	910	1697	Alfordsville....	3.8	3.8	14.0	15.8	Corn cockle
Russell Milling Company, The, Russell, Kans. Wheat Bran.....	1808	1553	Whiting	4.0	4.8	15.0	15.2	Screenings
Sahm, Adam, Lawrenceville, Ind. Sahm's Wheat Bran.....	561	3049	Lawrenceville..	3.7	4.4	14.0	16.0	
Salem Milling Co., Salem, Ind. Wheat Bran.....	1207	2481	Salem	3.8	4.3	14.0	15.1	
Sanderson, R. N., Orland, Ind. Wheat Bran.....	1738	2962	Orland	3.8	3.9	14.0	16.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Schaefer & Schwartzkopf, Columbus, Ind.								
Anchor Wheat Bran.....	477	1555	Columbus.....	3.8	3.8	14.0	15.0	Corn cockle
Anchor Wheat Bran.....	477	3084	Columbus.....	3.8	3.8	14.0	14.9	
Schalk Bros., Anderson, Ind.								
Schalk's Wheat Bran.....	223	2394	Anderson.....	3.8	4.1	14.0	14.6	Corn cockle
Schulenburg & Douselman, R. F. D. No. 8, Dillsboro, Ind.								
Wheat Bran.....	967	1584	Dillsboro.....	3.8	4.0	14.0	14.4	Corn cockle
Wheat Bran.....	967	2956	Hays Branch..	3.8	3.8	14.0	14.0	
Sheridan Milling Co., Sheridan, Ind.								
Bran.....	367	2954	Sheridan.....	3.8	2.9	14.0	13.8	
Shine & Co., John H., New Albany, Ind.								
Wheat Bran.....	2086	2486	Borden.....	3.8	3.8	14.0	14.6	Corn cockle, cheat
Sifter Roller Mills, Spencer, Ind.								
Wheat Bran.....	338	1732	Spencer.....	3.8	4.0	14.0	16.2	Corn cockle
Sims Grain Co., J. T., Frankfort, Ind.								
Wheat Bran.....	1179	2369	Frankfort.....	3.7	3.9	14.0	14.4	
Wheat Bran.....	1179	2385	Mulberry.....	3.7	4.1	14.0	15.4	
Sleepy Eye Milling Co., Sleepy Eye, Minn.								
Sleepy Eye Bran.....	519	1762	Saratoga.....	4.0	5.0	15.0	15.9	Corn cockle, excessive amount.
Sleepy Eye Bran.....	519	2591	Mishawaka.....	4.0	4.6	15.0	15.6	Corn cockle, excessive amount
Sloan, J. F., Palestine, Burket P. O., Ind.								
Sloan's Wheat Bran.....	228	2017	Palestine.....	3.8	3.8	14.0	14.4	Corn cockle
Smeltzly, I., Anson, Ontario, Ind.								
Wheat Bran.....	1609	2976	Ontario.....	3.8	3.4	14.0	13.0	Corn cockle
Smith, Wm., Versailles, Ind.								
Smith's Wheat Bran.....	881	2890	Versailles.....	3.8	3.9	14.0	14.6	
Smith Grain & Milling Co., Warsaw, Ind.								
Wheat Bran.....	804	1951	Warsaw.....	3.5	2.9	12.5	14.1	Corn cockle
Smith, Roper & Co., Hobart, Ind.								
Hobart Wheat Bran.....	78	1647	Hobart.....	3.5	3.8	14.0	15.1	
Hobart Wheat Bran.....	78	2941	Hobart.....	3.5	4.7	14.0	13.4	Corn cockle, chaff
Southwestern Milling Company, The, Kansas City, Mo.								
K. C. K. Bran.....	1566	1515	Gary.....	5.2	4.0	15.0	16.1	Corn cockle
K. C. K. Bran.....	1566	2462	Thorntown.....	5.2	3.8	15.0	16.5	4.6% foreign matter, consisting of small grains of wheat, cheat, barley, chaff, corn cockle and grass seeds
South Whitley Mills, South Whitley, Ind.								
*Wheat Bran.....	2142	1939	S. Whitley.....	3.8	3.5	14.0	14.9	Corn cockle
Spencer & Co., J. W., Veedersburg, Ind.								
Wheat Bran.....	333	2777	Veedersburg..	3.0	4.4	12.0	15.1	
Spencer Milling Co., Spencer, Ind.								
Spencer Milling Co.'s "Wheat Bran".....	700	1735	Spencer.....	3.5	4.1	14.0	15.4	Corn cockle

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Quaranteed	Found	Quaranteed	Found	
Spink Milling Co., The, Washington, Ind. Wheat Bran.....	459	1690	Washington	3.5	3.9	12.0	15.8	Corn cockle
Wheat Bran.....	459	2924	Washington	3.5	4.1	12.0	15.5	
Spy Run Fuel & Feed Co., Ft. Wayne, Ind. Wheat Bran.....	1499	1917	Ft. Wayne	3.8	3.5	14.0	15.7	
Star & Crescent Milling Co., Chicago, Ill. Star Bran	1890	1810	South Bend	4.0	4.1	14.0	14.8	
Star Milling Co., The, Aurora, Ind. Bran	1089	1533	Aurora	3.8	4.1	14.2	15.1	Corn cockle, cracked corn
Bran	1089	2063	Aurora	3.8	3.9	14.2	14.2	
Star Milling Co., Shoals, Ind. Star Wheat Bran.....	502	1779	Shoals	3.8	3.6	14.0	15.9	Corn cockle
St. Clair Roller Mills, Port Recovery, O. St. Clair Roller Mills Wheat Bran.....	1743	1469	Portland	3.7	4.0	14.0	16.9	
Steckley, George, Kendallville, Ind. Wheat Bran	1023	1851	Kendallville	3.8	4.4	14.0	15.4	Screenings
Steinhall & Velceine Milling Co., Orleole, Ind. *Bran	1998	1517	Orleole	3.5	3.8	14.0	14.7	Corn cockle
Stoudt, Thomas, South Bend, Ind. Thos. Stoudt's Wheat Bran.....	279	1788	South Bend	4.0	3.5	15.4	14.8	
Thos. Stoudt's Wheat Bran.....	2234	2000	South Bend	3.3	3.5	14.5	14.5	Corn cockle
Street Milling Co., J., LaPorte, Ind. Wheat Bran	769	1738	LaPorte	3.8	3.8	14.0	14.2	Cockle & sorrel
Sunlight Milling Co., Mt. Vernon, Ind. Sunlight Milling Co.'s Wheat Bran.....	723	2315	Mt. Vernon	3.8	3.9	14.0	15.4	Corn cockle
Teeter Mill & Elevator Co., Hagerstown, Ind. Teeters Wheat Bran.....	594	2084	Hagerstown	3.9	4.0	12.0	14.4	Corn cockle
Thomas, A. R., Markle, Ind. Thomas' Wheat Bran.....	617	2239	Markle	3.8	4.1	14.0	15.3	
Thornburg Milling Co., Martinsville, Ind. Bran	656	2097	Martinsville	3.2	3.4	14.0	15.3	
Thorntown Milling Co., Thorntown, Ind. Wheat Bran.....	634	2226	Thorntown	3.0	3.4	16.0	14.7	
Thurgood, Geo. R., Vincennes, Ind. Bran	1538	2041	Vincennes	3.8	3.7	14.0	14.1	Corn cockle
Tobrocke, Henry, Waymansville, Ind. Wheat Bran.....	1968	1561	Waymansville	3.8	4.0	14.0	15.6	Corn cockle
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Wheat Bran.....	1195	1838	Topeka	3.8	4.0	14.0	15.0	Corn cockle
Topeka Milling Co.'s Wheat Bran.....	1195	2306	Topeka	3.8	4.8	14.0	14.1	Screenings
Tresselt & Sons, C., Ft. Wayne, Ind. Wheat Bran.....	409	1893	Ft. Wayne	3.8	3.3	14.0	15.2	
Wheat Bran.....	409	1942	Ft. Wayne	3.8	3.5	14.0	15.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Trimble Milling Co., The, Milton, Ky. *Wheat Bran.....	1988	1511	Madison	3.8	3.9	14.0	13.9	Corn bran, cockle cheat
Tunnell Mills, (H. C. Dodd & Son) Charles- town, Ind. **Wheat Bran.....	1080		Charlestown.....	4.2		16.2		
Tuttle & Co., R., Columbia City, Ind. Perfection Bran.....	817	1923	Columbia City	3.9	3.4	14.0	15.5	
Uhl & Co., Dennis, Logansport, Ind. Uhl's Wheat Bran..... Uhl's Wheat Bran.....	149	2104	Logansport ---	4.5	4.0	14.0	14.7	
	149	2105	Logansport ---	4.5	3.7	14.0	14.8	
Uhl & Snider, Connersville, Ind. Uhl & Snider's Wheat Bran.....	523	3052	Connersville ..	3.9	4.2	12.0	15.4	
Ulrey & Co., A. A., Fairmount, Ind. Ulrey's Wheat Bran.....	455	2626	Fairmount ----	3.8	3.8	14.0	14.6	
Valler & Spies Milling Co., St. Louis, Mo. Wheat Bran.....	1938	2239	W. Terre Haute	3.5	4.3	14.0	15.4	
Valparaiso Grain & Elevator Co., Val- paraiso, Ind. Wheat Bran.....	1402	1652	Valparaiso ----	3.8	4.0	14.0	17.4	Whole wheat, wild buckwheat, cheat
Van Camp Milling Co., The, Decatur, Ind. Wheat Bran.....	2250	2824	Linn Grove....	4.0	3.2	15.4	14.9	
Victor Milling Co., Terre Haute, Ind. Pure Winter Wheat Bran	2036	2284	Terre Haute....	3.8	3.8	14.0	14.3	Corn cockle, cheat
Victoria Milling Co., Jasper, Ind. Victoria Wheat Bran.....	795	1874	Jasper	3.8	4.2	14.0	15.6	Corn cockle
Viers & Wicks, Rochester, Ind. Viers & Wick's Wheat Bran.....	319	2046	Rochester ----	3.0	3.2	14.0	14.9	Corn bran
Volland Milling Co., The, Ft. Wayne, Ind. Volland's Wheat Bran.....	257	1939	Ft. Wayne.....	3.8	3.1	14.0	15.5	Corn cockle
Wakarusa Milling Co., Wakarusa, Ind. Wakarusa Wheat Bran.....	1249	1849	Wakarusa ----	3.8	3.5	14.0	15.1	Corn cockle
Walker & Norris, Washington, Ind. Wheat Bran	317	1700	Washington --	4.0	3.8	15.4	14.5	
Wheat Bran	317	2022	Washington ---	4.0	4.0	15.4	14.0	
Wanatah Roller Mills, Wanatah, Ind. Mitzner's Wheat Bran.....	1950	2900	Wanatah	3.5	4.2	13.5	14.1	
Washburn Crosby Co., Minneapolis, Minn. Washburn Crosby Co.'s Coarse Bran.....	2067	2149	Bloomington ..	4.0	4.9	14.0	14.9	Contains small grains of wheat and weed seeds
Washburn Crosby Co.'s Coarse Bran.....	2067	2305	Earl Park ----	4.0	4.9	14.0	14.6	2½% foreign ma- terial, consisting of small grains of wheat, corn cockle and weed seeds
Washburn Crosby Co.'s Coarse Bran.....	2067	2658	Westfield	4.0	5.2	14.0	14.9	3.3% foreign ma- ter, containing chaff, corn cockle and other weed seeds

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Western Flour Mill Co., Davenport, Ia. *Black Hawk Wheat Bran.....	2440	2781	Hillsboro	4.7	4.0	14.0	15.3	
Williams, F. C., Sellersburg, Ind. Wheat Bran	215	1619	Sellersburg	3.8	3.8	14.0	14.2	Corn cockle
Williamsport Milling Co., Williamsport, Ind. Wheat Bran	680	2422	Williamsport..	3.9	4.4	14.0	14.2	Corn cockle
Willson, William D., Osgood, Ind. Willson's Wheat Bran.....	108	2295	Osgood	3.0	4.0	12.0	13.5	
Winkler, Geo. W., Freelandville, Ind. Winkler Wheat Bran	311	2708	Freelandville ..	3.8	3.9	14.0	14.9	
Zehner Milling Co., Plymouth, Ind. Wheat Bran	1431	1968	Plymouth	3.8	3.4	14.0	14.7	
Zillak & Schafer Milling Co., Evansville, Ind. Bran	1161	1978	Evansville	2.6	4.0	14.5	14.5	Screenings
WHEAT BRAN AND SCREENINGS								
Bischoff & Bros., A. G., Morris, Ind. Bischoff & Bros., Wheat Bran & Screenings Bischoff & Bros., Wheat Bran & Screenings	714	1673	Morris	3.0	4.0	14.0	14.2	
	714	3087	Morris	3.0	4.1	14.0	13.8	
Bergenroth Bros., Troy, Ind. Bergenroth's Wheat Bran and Screenings	2024	2770	Troy	3.8	4.2	14.0	14.0	
Central Kansas Mill, Lyons, Kansas. **Bran and Screenings.....		2387	New Castle.....	3.8			17.9	
Coppes, Zook & Mutschler, Nappanee, Ind. Mixed Feed	2343	2666	Lima.....	3.6	4.0	15.0	13.7	
Enterprise Milling Co., Milroy, Ind. Bran and Screenings.....	2077	2269	Greensburg	2.9	3.8	14.1	15.5	
Bran and Screenings.....	2077	3070	Milroy	2.9	4.1	14.1	14.6	
Garland Milling Company, Greensburg, Ind. Garland Bran and Screenings.....	2383	3079	Greensburg	3.7	4.1	14.1	14.7	
Graston, G. W., Dupont, Ind. Bran and Screenings.....	1104	1509	Dupont	3.8	3.9	14.0	14.3	
Harris, J. C., Montgomery, Ind. Wheat Bran and Screenings.....	895	1695	Montgomery ..	3.6	3.8	14.0	14.7	
Heimsath, John F., Napoleon, Ind. Enterprise Wheat Bran and Screenings..	696	2683	Napoleon	3.7	3.8	14.1	15.2	
Holdaway & Co., W. L., Terre Haute, Ind. Mixed Feed	2195	2171	Terre Haute....	3.8	4.9	14.0	14.7	
Home Mill & Grain Co., Mt. Vernon, Ind. Mixed Feed.....	2341	2317	Mt. Vernon....	3.8	4.0	14.4	14.7	
Loughry Bros., Milling & Grain Co., Monticello, Ind. Loughry's Mixed Feed.....	1946	2080	Monticello	3.7	4.5	14.0	14.9	
Loughry's Mixed Feed.....	1946	2693	Flora	3.7	4.5	14.0	13.8	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Moutoux Bros., Evansville, Ind. Mixed Feed	1974	1988	Evansville	3.5	3.4	13.5	14.1	
New & Cook, Zionsville, Ind. Wheat Bran and Screenings	1701	2234	Zionsville	3.5	3.5	13.0	15.4	
Peru Milling Company, The, Peru, Ind. Wheat Bran and Screenings	17	2128	Peru	3.1	3.5	14.5	15.9	
Oldenburg Flour Mills, Oldenburg, Ind. Mixed Feed	489	1671	Oldenburg	3.9	4.4	12.8	15.4	
Mixed Feed	489	3023	Oldenburg	3.9	4.0	12.8	15.0	
Otwell Mill Co., Otwell, Ind. Wheat Bran and Screenings	1107	1984	Otwell	3.5	3.4	13.5	14.6	
Schultz & Sons, Elberfeld, Ind. Wheat Bran and Screenings	1109	1960	Elberfeld	3.5	3.9	13.5	14.0	
Walker & Co., Peter M., Loogootee, Ind. Bran and Screenings	539	1705	Loogootee	3.6	3.7	14.0	14.7	
Wright Milling Co., Paris Crossing, Ind. Wright Milling Co.'s Mixed Feed	159	1679	Paris Crossing	3.9	3.6	14.0	14.7	
WHEAT BRAN AND SWEEPINGS								
Fourteen Mile Valley Mills, R. F. D. No. 2, Lexington, Ind. Mixed Wheat Bran	1301	1505	Hardy	3.8	3.7	14.0	14.1	
STANDARD WHEAT MIDDINGS AND SHORTS								
Acme Milling Co., The, Aurora, Ind. Middlings	968	1530	Aurora	3.9	4.5	14.2	15.2	
Middlings	968	2900	Aurora	3.9	4.4	14.2	14.4	
Ahr & Singer, Monroeville, Ind. Wheat Middlings	1506	2262	Monroeville	4.0	4.0	10.0	14.7	
Akin-Erskine Milling Co., The, Evansville, Ind. "Pure Winter Wheat Fancy Shorts"	36	1860	Evansville	4.5	4.5	16.3	16.1	Corn cockle and cheat
Allen & Wheeler Co., Troy, Ohio. **Middlings	---	3087	Mooreland	---	5.0	---	15.0	
Amboy Milling Co., Amboy, Ind. *Middlings	2313	2526	Amboy	4.0	4.5	14.0	15.7	
Amo Milling Co., Amo, Ind. Amo Milling Co.'s Wheat Middlings	354	1681	Amo	3.7	4.0	14.1	15.1	
Anderson & Brown, Plainfield, Ind. Shorts	1262	2630	Plainfield	4.5	4.2	14.9	14.4	
Anderson, C., New Waverly, Ind. Wheat Middlings	1831	2902	Pipe Creek Mill	4.0	5.4	14.0	16.4	
Angola Flouring Mills, Angola, Ind. Angola Flouring Mills, Middlings	1097	2506	Angola	4.0	4.1	14.0	15.1	
Arms & Kidder, Kansas City, Mo. Wheat Shorts	2062	2185	Terre Haute	4.0	4.9	14.0	19.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Baldwin, Jr., Dwight M., Minneapolis, Minn.							
Dwight Flour Mills Pure Shorts.....	1681 1571	Crown Point..	4.0	4.9	13.0	16.7	
Dwight Flour Mills Pure Shorts.....	1681 2948	Crown Point..	4.0	6.1	13.0	16.1	Appreciable amount wild buckwheat
Ballard & Ballard Company, Louisville, Ky.							
Ballard's Shorts	2017 1689	Charlestown ..	4.1	4.1	15.0	16.0	Screenings
Ballard's Shorts	2017 2485	Borden	4.1	4.5	15.0	15.3	Screenings
Barlow, C. M., Kokomo, Ind.							
Wheat Middlings	179 2504	Kokomo	3.9	4.9	14.5	14.6	
Barnes & Company, R. J., Dunkirk, Ind.							
Middlings	238 2543	Dunkirk	2.9	3.9	13.9	15.2	
Barrett Elevator Co., Greenfield, Ind.							
*Shorts	2349 2063	Greenfield ..	4.0	5.1	14.0	16.2	
Batchelor, Fox & Davis, Sharpsville, Ind.							
Wheat Shorts.....	340 2083	Sharpsville ..	4.0	3.9	14.0	14.3	
Beckman Supply Co., The, Hammond, Ind.							
Wheat Middlings	1848 1548	Hammond	3.0	5.8	12.0	17.6	Wild buckwheat
Bergenroth Bros., Troy, Ind.							
Middlings	154 1458	Troy	4.2	5.9	17.0	17.1	
Wheat Shorts.....	155 1459	Troy	4.0	4.7	14.0	16.0	Cheat, corn cockle, 40% wheat bran
Middlings	2025 2771	Troy	4.0	5.1	15.0	16.5	Corn cockle
Berne Milling Co., Berne, Ind.							
Wheat Middlings	2107 1776	Berne	3.3	3.9	14.0	15.3	
Wheat Middlings	2107 2459	Berne	3.3	3.3	14.0	15.1	
Bickhart, Chris. J., St. Paul, Ind.							
Wheat Middlings and Wheat Shorts	1038 3008	St. Paul.....	4.0	4.0	13.5	14.3	
Bleker Bros., Hammond, Ind.							
Wheat Middlings.....	1338 1543	Hammond	3.0	4.4	12.0	16.3	Screenings, wild buckwheat
Bleker, F. A., Crown Point, Ind.							
Wheat Middlings.....	1390 1569	Crown Point..	4.0	5.8	14.0	16.9	Wild buckwheat
Big Diamond Milling Co., Minneapolis, Minn.							
*Big Diamond Middlings.....	2126 1758	Clinton	3.8	5.8	14.0	16.5	Corn cockle
Billman & Sons, C. H., Shelbyville, Ind.							
Shelby Shorts	94 2348	Shelbyville.....	4.0	4.3	14.0	15.4	
Bischoff & Bros., A. G., Morris, Ind.							
Bischoff & Bros. Wheat Middlings.....	715 1674	Morris	4.0	4.6	14.6	15.2	
Bischoff & Bros. Wheat Middlings.....	715 3028	Morris	4.0	4.5	14.6	15.4	
Blanton Milling Co., The, Indianapolis, Ind.							
Blanton's Middlings	47 2123	Indianapolis ..	3.6	5.0	16.1	15.8	
Bluffton Milling Co., Bluffton, Ind.							
Wheat Shorts.....	660 2201	Bluffton	4.5	5.8	14.9	18.3	
Bock, Leonard, Argos, Ind.							
Wheat Middlings	549 2049	Argos	4.0	4.5	14.0	14.8	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Boldt & Son, Crawfordsville, Ind. Boldt's Shorts -----	51 2972	Crawfordsville	4.0	5.0	14.0	15.3	
Boles & Jones, Milroy, Ind. Middlings -----	468 2264	Greensburg	3.1	4.5	14.1	15.3	
Middlings -----	468 3063	Milroy	3.1	4.7	14.1	16.1	
Boonville Milling Co., Boonville, Ind. Shorts -----	930 2320	Boonville	4.0	5.0	14.0	16.1	
Borcherding Mill Co., H. F., Vallonia, Ind. *Borcherding Wheat Middlings -----	2010 1576	Vallonia	2.9	2.1	13.5	11.7	
Bourbon Elevator & Milling Company, Bourbon, Ind. Bourbon Middlings -----	166 2030	Bourbon	4.0	3.9	14.0	14.8	
Bristol Milling Co., Bristol, Ind. Wheat Middlings -----	2019 1943	Bristol	4.0	4.3	14.0	14.3	
Broadway Mills, Vincennes, Ind. Wheat Middlings -----	301 2037	Vincennes	3.7	4.0	14.0	15.3	
Brudl & Co., Jos., New Haven, Ind. Middlings -----	584 2246	New Haven	4.0	4.5	14.0	15.4	
Buck, F. P., Pleasant Lake, Ind. Wheat Middlings -----	1707 2559	Pleasant Lake	4.0	4.3	14.0	15.7	
Bunker Hill Milling Co., Evansville, Ind. Fancy Shorts -----	706 1973	Evansville	4.0	4.5	14.0	15.6	
Burge Milling Co., Marion, Ind. Burge Milling Co.'s Shorts -----	230 2334	Marion	4.0	5.0	14.0	15.3	
Burrell & Morgan, Elkhart, Ind. Middlings -----	254 1830	Elkhart	4.0	4.3	14.0	16.6	
Butler Milling Co., Butler, Ind. Butler Milling Co.'s Wheat Middlings -----	1080 2320	Butler	4.0	4.4	14.0	14.9	
Canine Bros. Milling Co., Clinton, Ind. Wheat Middlings -----	1875 1759	Clinton	4.0	4.0	14.0	15.2	
Carpenter, B. O., Perrysville, Ind. "Wheat Middlings" -----	343 2775	Perrysville	4.0	4.5	14.0	14.6	
Caulle & Dunlevy, Henryville, Ind. Wheat Shorts -----	1236 1623	Henryville	4.0	5.4	14.0	16.0	
Wheat Shorts -----	1236 2360	Henryville	4.0	4.6	14.0	15.0	
Caulle, O. L. Pekin, Ind. Wheat Shorts -----	1016 1866	Pekin	4.0	4.3	14.0	15.6	
Wheat Shorts -----	1016 2367	Pekin	4.0	5.1	14.0	15.2	
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Wheat Shorts -----	420 1463	Silverwood	4.0	4.0	14.0	16.9	15 to 20% wheat bran
Cayuga Milling Co.'s Wheat Shorts -----	420 1463	Cayuga	4.0	4.3	14.0	17.3	
Champion Roller Milling Co., Richmond, Ind. Wheat Middlings or Shorts -----	145 2417	Richmond	3.7	5.5	14.0	16.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
City Mills, Huntington, Ind. City Mills' Wheat Middlings.....	1810	2191	Huntington	4.0	4.6	14.0	15.4	
Clark Bros., Hagerstown, Ind. Wheat Middlings.....	2007	2008	Hagerstown	3.7	4.3	14.0	15.8	
Clark & Sons, C. G., Rushville, Ind. Clark's Middlings.....	186	1696	Rushville	3.9	4.8	14.0	14.1	
Clark's Middlings.....	186	2061	Rushville	3.9	4.9	14.0	15.8	
Claypole, Geo. M., Sardinia, Ind. Geo. M. Claypole's Wheat Middlings.....	2500	2008	Sardinia	4.0	5.7	14.0	17.5	
Clayton Milling Co., Clayton, Ind. Clayton Wheat Middlings.....	2114	2532	Clayton	3.9	4.8	14.2	15.8	
Cook & Boyd, Richmond, Ind. Wheat Middlings.....	883	2420	Richmond	3.7	4.6	14.0	15.4	
Coppes, Zook & Mutschler Co., Nappanee, Ind. Middlings.....	268	1944	Shipsheewanna	4.7	4.9	17.2	16.7	
Middlings.....	268	1995	North Liberty	4.7	5.1	17.2	16.6	
Middlings.....	268	2080	Lima	4.7	5.2	17.2	15.8	
Corbin Milling Co., New Harmony, Ind. Corbin's Wheat Middlings.....	314	2045	New Harmony	4.0	5.3	14.0	17.0	
Corydon Milling Company, The, Corydon, Ind. The White Mill Wheat Middlings.....	90	1484	Corydon	4.0	3.9	14.0	14.9	
Crandal, L. W., Fremont, Ind. Wheat Middlings.....	1651	2551	S. W. of Fremont	4.0	4.8	14.0	16.9	Screenings
Dair Brothers, West Harrison, Ind. Dair's Wheat Middlings.....	1070	3043	West Harrison	4.0	4.5	14.0	14.4	
Daisy Roller Mills, Brookville, Ind. Wright's Wheat Middlings.....	400	2088	Brookville	4.0	3.4	14.0	15.0	
Daniels, Milo S., North Webster, Ind. Wheat Shorts.....	1581	2080	North Webster	4.0	3.2	10.0	13.6	
Daniels & Pickering Co., Middletown, Ind. Daniels' Middlings.....	106	2375	Middletown	3.7	4.2	14.0	14.7	
Deck, James M., Roann, Ind. Pure Wheat Middlings.....	196	2065	Roann	4.0	3.7	14.0	14.0	
Dillsboro Milling Co., Dillsboro, Ind. Wheat Shorts.....	1008	1542	Dillsboro	4.0	4.5	14.0	15.1	
Wheat Shorts.....	1008	2906	Dillsboro	4.0	3.9	14.0	14.0	
Donmeyer, Gartner & Co., Peoria, Ill. *Middlings.....	2612	2782	Covington	4.5	3.3	15.0	17.8	
Egloff Sons, A., St. Meinrad, Ind. Shorts.....	978	1878	St. Meinrad	4.4	4.4	16.9	15.9	
Elnora Milling Co., The, Elnora, Ind. Wheat Middlings.....	390	2072	Elnora	3.2	3.3	13.0	13.0	
Emison, J. & S., Vincennes, Ind. Middlings.....	1536	2069	Vincennes	4.0	4.8	14.0	15.6	
Middlings.....	1536	2917	Vincennes	4.0	4.8	14.0	15.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Enos & Lee, New Albany, Ind. Fancy Middlings.....	989 1613	New Albany.....	4.0	4.1	16.0	16.3	
Enterprise Milling & Elevator Co., Milroy, Ind. Middlings	853 2266	Greensburg	3.8	4.2	14.3	16.9	Corn cockle and large amount of bran
Enterprise Milling Co., Milroy, Ind. Middlings	2817 3064	Milroy	3.8	5.1	14.3	16.0	
Etna Lumber, Grain & Milling Co., Etna Green, Ind. Winter Wheat Middlings.....	240 2612	Etna Green	4.0	3.8	14.0	14.0	Corn cockle
Farmland City Flour Mills, The, Farm- land, Ind. Wheat Shorts	1656 2690	Farmland	4.0	3.9	14.0	14.2	
Fette, Nicholas H., New Alsace, Ind. Fette's Cleaned Wheat Middlings.....	485 3046	New Alsace	4.0	3.4	14.0	14.0	
Flack Bros., East Chicago, Ind. Wheat Middlings	1889 1554	East Chicago.....	3.5	4.8	19.0	16.8	Wild buckwheat
Wheat Middlings	1889 3799	East Chicago.....	3.5	4.8	19.0	16.8	
Flat Rock Cave Mills, R. R. No. 2, Shelby- ville, Ind. Shorts	1251 2854	Shelbyville	4.0	4.0	14.0	14.7	
Flater, Joda, Alfordsville, Ind. Joda Flater Wheat Middlings.....	577 1608	Alfordsville	4.0	3.4	14.0	14.0	Corn cockle
Follett & Co., R. J., Carmel, Ind. Wheat Shorts	2120 2659	Carmel	3.0	4.9	14.0	15.8	
Fornax Roller Mills, Decatur, Ind. Fornax Middlings.....	928 2206	Decatur	5.0	4.1	17.0	15.4	
Fremont Flouring Mills, Fremont, Ind. Fremont Flouring Mills Wheat Middlings	1655 2557	Fremont	4.0	3.9	14.0	13.7	
Friendship Milling Co., Friendship, Ind. Shorts	990 1537	Friendship	4.0	4.0	14.0	15.2	
Shorts	990 2659	Friendship	4.0	4.4	14.0	15.2	
Fritch, J. D., Frankfort, Ind. Fritch's Wheat Middlings.....	309 2304	Frankfort	3.8	4.5	14.0	15.0	
Frye, Joseph, Middletown R. F. D. No. 2, Ind. Frye's Wheat Middlings.....	647 2378	Middletown	3.7	5.3	14.0	16.1	Corn cockle
Fyke Milling Co., LaGrange, Ind. Middlings	1815 1839	LaGrange	3.8	4.3	14.0	15.6	
Middlings	1815 2978	LaGrange	3.8	4.5	14.0	15.2	
Gandy & Co., O., South Whitley, Ind. Wheat Middlings	1474 1983	South Whitley.....	4.0	3.5	14.0	13.9	
Garland Milling Company, The, Greens- burg, Ind. Garland Middlings	198 2259	Greensburg	3.8	4.4	14.3	15.6	
Garland Middlings	198 3071	Greensburg	3.8	4.5	14.3	15.5	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Crude Fat percent.		Crude Protein percent.		REMARKS
	Official Inspection C.	Sample taken at	Guaranteed	Found	Guaranteed	Found	
Globe Mills, The, Ft. Wayne, Ind. The Globe Mills Wheat Shorts.....	426	1896 Ft. Wayne.....	4.0	4.9	14.0	15.9	
Goshen Milling Company, The, Goshen, Ind. Middlings	65	1814 Goshen	4.1	4.4	14.5	15.6	
Middlings	65	1815 Elkhart	4.1	4.4	14.5	15.8	
Middlings	65	2991 New Paris.....	4.1	4.9	14.5	15.2	
Graft Bros., Winchester, Ind. Graft Bros. Wheat Middlings.....	1181	1768 Winchester	4.0	4.2	14.0	15.9	
Grim, Loyd, Springport, Ind. Grim's Wheat Middlings.....	351	3081 Springport	3.7	3.8	14.0	14.3	
Guyatt, Wm., Knox, Ind. Wheat Middlings	29	1994 Knox	4.0	4.1	14.0	14.5	
Hardinsburg Milling Co., Hardinsburg, Ind. Wheat Shorts.....	2269	2415 Hardinsburg ..	3.5	4.5	13.0	14.7	
Harris Milling Co., Greencastle, Ind. Harris' Middlings.....	311	2175 Greencastle	3.6	5.3	14.5	16.1	
Hawk Bros. Milling Co., Mongo, Ind. Middlings	1818	2983 Mongo	3.8	3.9	14.0	14.0	
Hawk & Wisman, Angola, Ind. Hawk & Wisman's Wheat Middlings.....	1079	2565 Angola	4.0	5.3	14.0	16.3	
Haynes Milling Co., The, Portland, Ind. Wheat Middlings	91	2431 Portland	4.0	4.0	14.0	16.0	
Haysville Milling Company, Haysville, Ind. Haysville Milling Co.'s Wheat Shorts.....	849	1876 Haysville	4.0	5.3	14.0	17.3	
Heckman, Charles, Decatur, Ind. Wheat Middlings	944	2309 Decatur	4.0	3.5	14.0	14.0	
Helmsath, John F., Napoleon, Ind. Enterprise Middlings	607	2889 Napoleon	3.8	4.3	14.3	15.9	
Hendry & Bassett, Angola, Ind. Wheat Middlings	1636	2569 Angola	4.0	4.3	14.0	15.4	Buckwheat hulls, wild buckwheat, weed seeds
Hill, Thos. J., South Bend, Ind. Wheat Middlings	980	1808 South Bend....	4.0	5.7	14.0	13.3	
Hills, H. B., Fremont, Ind. Wheat Middlings	1654	2556 Fremont	4.0	4.5	14.0	14.8	
Holland Mills, The, Holland, Ind. *Middlings	2155	1926 Holland	3.5	4.6	13.0	15.4	
Holton Milling Co., Holton, Ind. Wheat Shorts	464	2887 Holton	4.0	3.8	14.0	14.7	
Hornung, J. M., Greensburg, Ind. Middlings	415	2261 Greensburg....	3.8	4.3	14.2	15.6	
Hubbard & Co., W. H., Monrovia, Ind. Shorts	993	2118 Monrovia	5.0	3.6	14.0	14.4	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Hunsicker & Bender, Bluffton, Ind. "A" Wheat Shorts	1550 2296	Bluffton	4.0	4.4	14.0	15.5	
Hunter Bros. Milling Co., St. Louis, Mo. Pure Wheat Middlings	389 1797	Lafayette	4.0	4.6	16.0	18.3	
Huntington Mill Co., Huntington, Ind. Shorts	406 2194	Huntington	3.9	5.4	14.3	16.6	
Igleheart Bros., Evansville, Ind. Igleheart's Bulk Middlings	113 1990	Evansville	4.0	5.2	15.0	17.3	
Imperial Mills, The, D. Z. Creitz, Prop., Cambridge City, Ind. Wheat Middlings	200 3050	Cambridge City	3.7	5.1	14.0	15.5	
Inglefield Milling Co., Inglefield, Ind. Inglefield Shorts	1588 1684	Inglefield	4.5	4.6	14.9	16.0	Wild buckwheat, weed seeds
Jacobson, Soren, Young America, Ind. Jacobson's Wheat Middlings	385 2219	Young America	4.0	5.2	14.0	15.8	
Jessup, Nevins & Co., Bloomingdale, Ind. Shorts	1062 2754	Bloomingdale	4.0	4.3	14.0	14.6	
Kannapel Milling Co., New Middleton, Ind. Kannapel's Wheat Shorts	1244 1488	New Middleton	4.0	4.1	14.0	14.8	
Katterjohn, Q. F., Boonville, Ind. Wheat Shorts	1039 2321	Boonville	4.0	5.1	14.0	16.2	
Keene, A. C., Elkhart, Ind. A. C. Keene's Wheat Middlings	1224 2679	Elkhart	4.0	4.2	14.0	14.0	
Keesler Milling Co., St. Joe, Ind. Keesler's Wheat Middlings	1121 2812	St. Joe	4.0	3.9	14.0	16.6	
Keilman Kimmert Co., The, Lowell, Ind. Wheat Middlings	1372 1502	Lowell	3.5	5.3	12.0	15.8	
	1372 3012	Lowell	3.5	5.0	12.0	16.7	
Kellman & Lowenberg, Dyer, Ind. Wheat Middlings	1415 1596	Dyer	4.0	5.1	14.0	18.4	
Kemper Mill & Elevator Co., Kansas City, Mo. Carnation Shorts	2066 1719	Bloomfield	4.3	4.5	16.0	18.8	
Keplinger, Charles, Zanesville, Ind. Middlings	842 2240	Zanesville	4.0	4.1	14.0	15.1	
Kennedy Milling Co., The, Geo. W., Shel- byville, Ind. Middlings	2110 2849	Shelbyville	3.5	5.8	13.5	17.5	
Kidder, Willard, Terre Haute, Ind. Winter Wheat Middlings	97 2181	Terre Haute	4.0	4.8	14.0	15.0	
Kidwell & Goode, Elwood, Ind. Kidwell & Goode's No. 2 Standard Wheat Middlings	21 2024	Elwood	4.0	4.4	14.0	15.1	
Kinsey Bros., Mentone, Ind. Shorts	1997 2615	Mentone	4.0	4.9	14.0	15.1	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat		Crude Protein		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Knoblock & Ginz Milling Co., South Bend, Ind. Wheat Middlings	1023 1799	South Bend	4.0	4.0	14.0	14.7	
Kriwitz Bros., Kendallville, Ind. Kriwitz Bros., Wheat Middlings	1041 1845	Kendallville	5.0	4.5	15.4	15.4	
Krome & Co., H. H., Batesville, Ind. Krome's Middlings	104 1883	Batesville	4.0	5.3	14.0	16.0	
Kuhn, R. A., Argos, Ind. *Wheat Middlings	2179 2062	Argos	4.0	5.5	14.0	16.5	
Lafayette Milling Co., The, Lafayette, Ind. Middlings	116 2340	Lafayette	4.0	5.3	14.0	15.7	
Lash Flour Mills, Fred B., Farmersburg, Ind. Lash's Shorts	907 2700	Farmersburg	4.0	5.7	14.0	16.0	
Lawrenceburg Roller Mills Co., The, Lawrenceburg, Ind. "Snowflake" Middlings	11 1525	Lawrenceburg	5.1	5.7	16.0	17.9	
Lewis Milling Co., Lewis, Ind. Wheat Shorts	541 2744	Lewis	4.0	3.5	14.0	14.6	
Ligonier Milling Co., Ligonier, Ind. Ligonier Milling Co.'s Wheat Middlings	380 1830	Ligonier	4.0	4.7	14.0	15.6	Corn cockle
Lindauer, Ferd., Fulda, Ind. Wheat Shorts	1085 1478	Fulda	4.0	5.3	14.0	15.4	Corn cockle
Listman Mill Co., LaCrosse, Wis. **Elmo Wheat Standard Middlings	2168	Liberty	---	6.9	---	18.9	
Little Crow Milling Co., Warsaw, Ind. Little Crow Wheat Middlings	361 1948	Warsaw	4.0	4.0	14.0	14.4	
Livonia Flouring Mills, Livonia, Ind. *Wheat Shorts	2287 2437	Livonia	4.0	3.8	14.0	13.7	
Long, John C. Long's Mill, R. F. D. No. 2, Chesterton, Ind. Wheat Middlings	1495 1627	Chesterton	4.0	4.0	14.0	14.7	
Loughry Bros., Milling & Grain Co., The, Monticello, Ind. Loughry's Wheat Middlings	40 2075	Monticello	4.0	4.7	14.0	17.4	
Lynn Mill & Elevator Co., Lynn, Ind. Wheat Shorts	1986 1501	Lynn	2.5	4.1	13.0	15.7	
Wheat Shorts	1986 2829	Lynn	2.5	4.1	13.0	14.9	
Wheat Shorts	1986 3085	Lynn	2.5	4.1	13.0	15.3	
Macy Milling Co., Macy, Ind. Wheat Middlings	711 2054	Macy	3.9	4.1	14.1	14.7	
Maginot, Mike, Hammond, Ind. Wheat Middlings	1342 1544	Hammond	3.0	4.8	12.0	15.4	Wild buckwheat, grass seeds
Wheat Middlings	1342 2204	Hammond	3.0	4.8	12.0	15.3	
Martin, Martin & Co., New Castle, Ind. Martin, Martin & Co.'s Wheat Middlings	220 2384	New Castle	3.7	4.2	14.0	19.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Martinsville Milling Co., The, Martinsville, Ind. Wheat Shorts -----	20 2087	Martinsville ---	4.0	5.7	14.0	16.8	Corn bran
Maxville Roller Mills, Maxville, Ind., R. No. 18, Farmland. Wheat Shorts -----	1725 1774	Maxville -----	4.0	4.0	14.0	14.4	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Wheat Middlings-----	451 1901	Fort Wayne ---	4.0	4.5	14.0	15.4	
Means & Witt, Lebanon, Ind. Wheat Shorts -----	84 2223	Lebanon -----	4.0	3.7	14.0	14.4	
Medaryville Milling Co., Medaryville, Ind. Medaryville Wheat Shorts and Middling	173 3015	Medaryville ---	4.0	4.0	14.0	14.8	
Mexico Milling Company, The, Mexico, Ind. Wheat Middlings -----	143 1856	Mexico -----	4.0	4.5	14.0	15.6	
Mid Continent Mills, Topeka, Kan. Winter Wheat Shorts-----	1841 2739	Boswell -----	4.0	4.9	15.0	18.8	
Middlebury Milling Co., Middlebury, Ind. Wheat Middlings -----	639 1832	Middlebury ---	4.0	4.4	14.0	15.0	Corn cockle
Miller & Dohner, Columbia City, Ind. Wheat Middlings -----	1029 1963	Columbia City	4.0	4.3	14.0	15.5	
Monroe Grain, Hay & Milling Co., Monroe, Ind. Wheat Middlings -----	2189 2451	Monroe -----	4.0	3.4	14.0	14.3	
Montoux Bros., Evansville, Ind. Wheat Shorts -----	124 1987	Evansville -----	4.0	5.6	14.0	16.8	
Morning Star Mill, Sommerville, Ind. Middlings -----	2006 1969	Sommerville ---	3.5	3.0	13.0	14.2	
Moscow Roller Mills, Moscow, Ind. Wheat Middlings -----	1633 1665	Moscow -----	3.8	4.1	14.2	14.4	
Wheat Middlings -----	1633 3069	Moscow -----	3.8	5.6	14.2	16.4	
Mueller & Sons, Peter, Ferdinand, Ind. Wheat Shorts -----	644 1893	Ferdinand -----	4.0	4.5	14.0	16.0	
Murray, D. R., Clinton, Ind. Wheat Shorts -----	1343 1756	Clinton -----	4.0	3.6	14.0	14.8	
Myers & Hartsock, Wilmot, Ind. Wheat Shorts -----	1580 2019	Wilmot -----	4.0	4.7	14.0	15.9	Corn cockle
McDill Milling Co., The, College Corner, Ind. †McDill's Pure Wheat Middlings-----	433 1061	College Corner.	3.7	4.7	14.0	14.7	
McNely, Thomas N., Walkerton, Ind. Wheat Middlings -----	1446 2012	Walkerton -----	4.0	4.0	14.0	14.0	
Nading, Simon, Hope, Ind. Simon Nading's Wheat Middlings-----	1984 1558	Hope -----	3.8	3.5	14.2	15.0	
Simon Nading's Wheat Middlings-----	1984 3069	Burney -----	3.8	3.7	14.2	14.9	
Neill & Van Valer, Jonesboro, Ind. Wheat Shorts -----	765 2535	Jonesboro -----	4.0	4.7	14.0	15.7	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
New Carlisle Milling Co., New Carlisle, Ind. Wheat Middlings	1317 1791	New Carlisle...	4.0	4.6	14.0	16.5	
Niccum & Russel, Kimmel, Ind. Wheat Middlings	1783 1472	Kimmel	4.0	3.5	14.0	15.0	
Nieman, C., Sunman, Ind. Nieman's Middlings	500 1679	Sunman	4.0	5.5	14.0	16.5	
Nieman's Middlings	500 3025	Sunman	4.0	5.6	14.0	16.5	
Niezer & Co., Monroeville, Ind. Wheat Middlings	1503 2251	Monroeville ...	4.0	3.9	14.0	14.5	Cracked corn
North Manchester Milling Co., North Manchester, Ind. "North Manchester Milling Company's Middlings"	855 2216	N. Manchester	4.0	4.0	14.0	14.6	
Nugent, Thomas, Jamestown, Ind. Wheat Middlings	208 2641	Jamestown ...	3.9	4.6	14.2	16.0	
Oaktown Flouring Mill Co., Oaktown, Ind. Shorts	1141 2709	Oaktown	4.0	4.2	14.0	14.6	
Oldenburg Flour Mills, Oldenburg, Ind. Wheat Shorts	490 1672	Oldenburg ...	4.0	3.7	14.0	14.2	
Pancost Milling Co., Elkhart, Ind. Middlings	800 1826	Elkhart	4.0	4.0	14.0	14.3	
Paoli Milling Co., The, Paoli, Ind. Shorts	627 2412	Paoli	3.0	5.2	12.0	16.3	
Pate, J. M., Cross Plains, Ind. Pure Wheat Shorts	840 1538	Cross Plains...	4.0	3.8	14.0	13.7	
Pendleton Milling Co., The, Pendleton, Ind. Wheat Middlings	1481 3089	Pendleton ...	4.0	4.0	14.0	14.6	
Pennville Milling Co., Pennville, Ind. Wheat Middlings	1697 2464	Pennville ...	4.0	4.4	14.0	16.1	
People's Flouring Mills, Ashley, Ind. Huber's Wheat Middlings	1217 2689	Ashley	4.0	4.1	14.0	14.8	
Peru Milling Company, The, Peru, Ind. Wheat Middlings	18 2129	Peru	3.1	4.9	14.2	16.2	
Phoenix Flour Mill, Evansville, Ind. Phoenix Wheat Middlings	122 1981	Evansville ...	4.4	4.4	16.2	16.2	
Pillsbury-Washburn Flour Mills Co., Ltd., Minneapolis, Minn. Pillsbury's B. Middlings	1333 2694	Galveston ...	4.5	5.0	14.0	16.5	
Pitman, E. L., Corydon, Ind. Pitman's Pure Wheat Middlings	676 1490	Corydon ...	5.0	3.4	15.4	14.4	Corn cockle
Pressel, S. J., Hagerstown, Ind. Pressel's Wheat Middlings	140 3061	Hagerstown ...	3.7	4.2	14.0	16.2	
Quickel, R. G., Hagerstown, Ind. Quickel's Wheat Middlings	615 3069	Hagerstown ...	3.7	3.0	14.0	11.9	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Ray & Rice, Camden, Ind. Ray & Rice's Wheat Shorts.....	612 2690	Camden	4.0	4.1	14.0	14.2	
Redden & Sons, New Paris, Ind. Redden's Wheat Middlings.....	973 1617	New Paris.....	4.0	3.7	14.0	14.1	
Redington & Morgan, Rolling Prairie, Ind. Wheat Middlings.....	2066 1794	Rolling Prairie	3.5	3.7	14.0	14.1	
Reed & Son, Isaac, Argos, Ind. *Wheat Middlings.....	2185 2063	Argos.....	4.0	4.5	14.0	17.6	
Richardson, Geo. L., Logansport, Ind. Wheat Middlings.....	2145 2113	Logansport	3.7	4.5	15.0	14.7	
Richmond Roller Mills, Richmond, Ind. The Richmond Roller Mills Wheat Middlings	483 2419	Richmond	3.7	5.1	14.0	15.8	
Ridgeville Roller Mills & Elevator, Ridge- ville, Ind. Wheat Middlings.....	1833 1797	Ridgeville	4.0	4.0	14.0	16.0	
Wheat Middlings.....	1833 2466	Ridgeville	4.0	4.1	14.0	16.0	
Riedel & Gray, Ossian, Ind. Wheat Middlings.....	2006 1711	Ossian	3.6	4.2	14.0	15.7	
Rittenhouse, E. S., Liberty Mills, Ind. Liberty Bird Middlings.....	374 2215	Liberty Mills..	4.0	4.3	14.0	14.5	
Riverside Mill, The, Wolcottville, Ind. Riverside Mills Wheat Middlings.....	1621 1841	Wolcottville ...	4.0	5.2	14.0	16.1	
Roach & Rothenberger, Delphi, Ind. Shorts and Middlings.....	286 2687	Delphi	4.0	5.1	14.0	15.4	
Rochester Roller Mills, Rochester, Ind. *Middlings	2169 2060	Rochester	4.0	4.3	14.0	15.2	
Rockport Milling Co., The, Rockport, Ind. Kopp's Wheat Middlings.....	1800 2345	Rockport	4.0	4.6	14.0	16.6	
Rohm Bros., Rockville, Ind. Shorts	263 2748	Rockville	4.0	3.8	14.0	14.4	
Rohm Bros. & Co., Mansfield, Ind. Shorts	295 2750	Mansfield	4.0	4.8	14.0	15.9	
Rokowski, Alex., South Bend, Ind. Wheat Middlings.....	1961 2506	South Bend....	4.0	7.0	14.0	18.0	
Rose Milling Co., Alfordsville, Ind. Wheat Middlings.....	909 1600	Alfordsville ...	4.0	5.2	14.0	17.1	
Sahm, Adam, Lawrenceville, Ind. Sahm's Middlings.....	560 3048	Lawrenceville ..	4.0	4.5	15.6	15.0	
Sanderson, R. N., Orland, Ind. Wheat Middlings.....	1735 2961	Orland	4.0	3.6	14.0	14.7	
Schalk Bros., Anderson, Ind. Schalk's Wheat Middlings.....	222 2393	Anderson	4.0	4.7	14.0	15.2	
Scholl & Tieteman, Welsburg, Ind. Wheat Middlings.....	470 2861	Welsburg	4.0	4.3	14.0	14.2	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Schulenburg & Donseiman, R. F. D. No. 8, Dillsboro, Ind. Wheat Shorts.....	968	1536 Hays Branch....	4.0	3.6	14.0	13.6	
Schultz & Sons, Elberfeld, Ind. Middlings	1108	1968 Elberfeld	4.0	3.7	14.0	15.0	
Sims Grain Co., J. T., Frankfort, Ind. Wheat Shorts.....	1178	2368 Frankfort	4.0	4.8	14.0	15.4	
Sleepy Eye Milling Co., Sleepy Eye, Minn. Sleepy Eye Wheat Middlings.....	518	1761 Saratoga	4.0	5.1	17.0	16.4	
Sloan, J. F., Palestine, Burket P. O., Ind. Sloan's Wheat Middlings.....	227	2016 Palestine	4.0	4.1	14.0	15.0	
Smeltzly, I. Anson, Ontario, Ind. Wheat Middlings	1608	2975 Ontario	4.0	5.5	14.0	15.2	Corn cockle
Smith Grain & Milling Co., Warsaw, Ind. Wheat Middlings	808	1960 Warsaw	3.8	4.5	13.5	14.8	
Smith, Roper & Co., Hobart, Ind. Hobart Wheat Middlings.....	79	1648 Hobart	3.5	4.4	14.0	16.8	
Hobart Wheat Middlings.....	79	2942 Hobart	3.5	4.9	14.0	15.4	
Hobart Wheat Shorts.....	81	1650 Hobart	4.0	5.1	14.0	17.2	
Smock & Caca, Noblesville, Ind. Shorts	1426	2669 Noblesville	4.0	5.4	14.0	16.2	
Snoddy, M. W., Covington, Ind., R. F. D. No. 1. Wheat Middlings	1073	2773 Covington	4.0	3.7	14.0	14.2	
South Side Cereal Mills, Ft. Wayne, Ind. South Side Cereal Mills Wheat Middlings.....	587	1914 Ft. Wayne.....	4.0	3.3	14.0	13.7	
Southwestern Milling Company, The, Kansas City, Mo. K. C. K. Shorts.....	1564	2461 Thorntown	5.2	5.4	15.5	20.5	
K. C. K. Shorts.....	1564	3091 Pendleton	5.2	5.3	15.5	18.0	
South Whitley Mills, South Whitley, Ind. *Wheat Middlings	2140	1937 S. Whitley	4.0	4.4	14.0	15.8	
Spencer & Co., J. W., Veedersburg, Ind. Wheat Shorts	334	2773 Veedersburg	3.0	4.3	12.0	14.5	
Spencer Milling Co., Spencer, Ind. Middlings	701	1736 Spencer.....	3.7	4.0	14.0	14.6	
Spy Run Fuel & Feed Co., Ft. Wayne, Ind. Wheat Middlings	1490	1918 Ft. Wayne.....	4.0	4.5	14.0	16.6	
Star & Crescent Milling Co., Chicago, Ill. Star Middlings	1329	1891 Monon	4.0	5.6	15.0	18.2	
Star Milling Co., The, Aurora, Ind. Middlings	1087	1533 Aurora	4.5	3.4	14.6	14.6	
Star Milling Co., Shoals, Ind. Star Shorts	503	1777 Shoals	4.0	4.8	14.0	16.8	Corn cockle
St. Clair Roller Mills, Fort Recovery, O. St. Clair Roller Mills Wheat Middlings.....	1744	1470 Portland.....	4.0	3.1	14.0	14.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Quarantied	Found	Quarantied	Found	
Steckley, George, Kendallville, Ind. Wheat Middlings	1624	1853	Kendallville	4.0	4.4	14.0	15.8	
Steele & Co., George W., Marion, Ind. Wheat Middlings	89	2359	Marion	3.1	3.9	14.2	14.4	
Stoudt, Thomas, South Bend, Ind. Thos. Stoudt's Wheat Middlings	277	1787	South Bend	5.0	4.6	15.4	16.1	
Street Milling Co., J., LaPorte, Ind. Wheat Middlings	761	1739	LaPorte	4.0	4.7	14.0	16.4	
Sunlight Milling Co., Mt. Vernon, Ind. Sunlight Milling Co.'s Wheat Middlings	729	2316	Mt. Vernon	4.0	5.3	14.0	16.9	
Taylor Hitz Co., Madison, Ind. Middlings	413	1492	Madison	4.0	4.6	14.0	15.7	Appreciable amount of bran
Middlings	413	2080	Madison	4.0	4.0	14.0	13.6	
Thomas, A. R., Markle, Ind. Wheat Shorts	2103	2343	Markle	3.2	3.3	14.1	14.7	
Thorntown Milling Co., Thorntown, Ind. Middlings	635	2227	Thorntown	3.5	4.3	13.0	14.9	
Thurgood, Geo. R., Vincennes, Ind. Shorts	1539	2043	Vincennes	4.0	5.2	14.0	16.1	
Tobrocke, Henry, Waymansville, Ind. Wheat Shorts	1959	1563	Waymansville	4.0	2.9	14.0	13.5	
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Middlings	1193	2294	Topeka	4.0	5.0	14.0	16.0	
Tresselt & Sons, C., Fort Wayne, Ind. Wheat Shorts	410	1893	Ft. Wayne	4.0	3.9	14.0	16.0	
Wheat Middlings	411	1894	Ft. Wayne	4.0	4.7	14.0	15.8	
Truitt & Son, Wm. P., East Enterprise, Ind. Middlings	1259	1520	East Enterprise	4.0	2.6	14.0	12.4	
Middlings	1259	2339	East Enterprise	4.0	4.5	14.0	14.5	
Tuttle & Co., R., Columbia City, Ind. Perfection Middlings	318	1929	Columbia City	4.0	4.8	14.0	16.0	
Uhl & Company, Dennis, Logansport, Ind. Uhl's Wheat Middlings	143	2103	Logansport	3.7	5.3	15.0	14.9	
Uhl & Snider, Connersville, Ind. Uhl & Snider's Wheat Middlings	523	3063	Connersville	3.7	4.4	14.0	15.5	
Ulrey & Co., A. A., Fairmount, Ind. Ulrey's Wheat Middlings	457	2623	Fairmount	4.0	5.9	14.0	16.8	
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Wheat Shorts	1405	1855	Valparaiso	4.0	5.2	14.0	17.8	
Van Camp, A., Decatur, Ind. Wheat Shorts	670	2211	Decatur	4.5	4.5	14.9	15.3	
Victoria Milling Co., Jasper, Ind. Victoria Wheat Shorts	796	1875	Jasper	4.0	3.5	14.0	14.5	

*—Before registration

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TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at.	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Viers & Wicks, Rochester, Ind. Viers & Wicks' Wheat Middlings.....	320	2047	Rochester	4.0	3.5	14.0	13.3	
Volland Milling Co., The, Ft. Wayne, Ind. Volland's Wheat Middlings	269	1940	Ft. Wayne	4.0	3.8	14.0	14.7	
Wabash Milling Co., The, Wabash, Ind. Middlings	2	2160	Wabash	4.0	4.5	14.0	16.6	
Middlings	2	2213	Wabash	4.0	5.1	14.0	17.0	
Wakarusa Milling Co., Wakarusa, Ind. Wakarusa Wheat Middlings.....	1348	1847	Wakarusa	4.5	4.0	15.0	16.3	
Walker & Co., Peter M., Loogootee, Ind. Wheat Middlings	539	1704	Loogootee	4.0	5.4	14.3	15.4	
Walker & Norris, Washington, Ind. Wheat Middlings	316	1699	Washington	5.0	5.1	15.4	17.1	
Wheat Middlings	316	2321	Washington	5.0	5.9	15.4	17.4	
Washburn-Crosby Co., Minneapolis, Minn. Washburn-Crosby Co.'s Standard Middlings	731	1550	Whiting	4.0	5.6	16.0	18.0	Appreciable amount of grass seed and wild buckwheat
Washburn-Crosby Co.'s Standard Middlings	2062	2306	Earl Park	4.0	5.5	15.0	17.4	
Wellington & Son, Anderson, Ind. Wellington's A. X. A. Middlings.....	77	2392	Anderson	4.0	4.9	15.0	15.5	
West Baden Milling Co., West Baden, Ind. Wheat Shorts	1011	2467	West Baden	4.0	4.0	14.0	13.7	
Western Flour Mill Co., Davenport, Ia. *Black Hawk Standard Middlings.....	2441	2780	Hillsboro	4.7	5.2	16.0	16.4	
Willen & Son, John, Clay City, Ind. Willen's Wheat Shorts.....	233	2443	Clay City	4.0	3.9	14.0	14.1	Chaff.
Williams, F. C., Sellersburg, Ind. Wheat Middlings	216	1620	Sellersburg	4.0	3.7	14.0	14.7	
Williamsport Milling Co., Williamsport, Ind. Middlings	2012	2424	Williamsport	3.9	3.7	14.1	13.6	
Middlings	2012	2790	Williamsport	3.9	4.3	14.1	16.3	
Willson, William D., Osgood, Ind. Willson's Wheat Shorts.....	107	2394	Osgood	3.0	5.2	13.0	16.5	
Winkler, Geo. W., Freelandville, Ind. Winkler Wheat Shorts.....	312	2709	Freelandville	4.0	5.3	14.0	16.7	
Zehner Milling Co., Plymouth, Ind. Wheat Middlings	1429	1963	Plymouth	4.0	4.8	14.0	15.9	
WHITE MIDDINGS								
Anderson & Denzine, Kouts, Ind. Wheat Middlings	434	2909	Kouts	5.0	1.6	15.4	11.9	
Anglemeyer, Jerry, Mount Zion, Ind. Anglemeyer's Wheat Middlings.....	1134	2056	Mt. Zion	4.0	2.6	14.0	11.9	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Auburn Roller Mills, (M. E. Hursh) Auburn, Ind. Auburn Roller Mills Middlings.....	776	2816	Auburn -----	4.0	3.4	14.0	13.8	
Bundy Mill Co., L. L., Vallonia, Ind. Wheat Middlings.....	2479	2874	Vallonia -----	3.9	3.3	13.5	13.4	
Canaan Milling Co., Canaan, Ind. Canaan Wheat Middlings.....	1962	1507	Canaan -----	1.5	1.8	10.0	10.1	
Canaan Wheat Middlings.....	1963	2010	Canaan -----	1.5	1.5	10.0	10.4	
Dilger Bros., Mariah Hill, Ind. Dilger Bros.' Wheat Shorts.....	83	1880	Mariah Hill ---	4.0	2.9	14.0	13.3	
Dragoo, B. S. & S. H., Yorktown, Ind. Middlings.....	2044	2279	Yorktown -----	3.5	2.3	14.0	12.8	
Drake, Otis, The Bowling Green Mills, Bowling Green, Ind. Shipstuff.....	1305	1744	Bowling Green..	4.0	2.6	14.0	12.6	
Enterprise Mill Co., The, Bicknell, Ind. Enterprise Wheat Middlings.....	466	2711	Bicknell -----	4.0	2.3	14.0	13.6	
Fortville Milling Co., Fortville, Ind. Fortville Milling Co.'s Wheat Middlings.....	1233	2366	Fortville -----	4.0	3.1	14.0	14.7	
Fredericksburg Milling Co., The, Fredericksburg, Ind. *Wheat Shorts.....	2280	2470	Fredericksburg	3.0	2.9	13.0	13.0	
Hall Milling Co., W. C., Brazil, Ind. Hall's Wheat Shorts.....	581	2200	Brasil -----	4.0	2.1	14.0	10.9	
Hampton, W. D., Worthington, Ind. Wheat Shorts.....	1123	1737	Worthington --	4.0	2.5	14.0	13.3	
Harbeck, Wm. Valparaiso, Ind.— Wheat Middlings.....	1410	1659	Valparaiso -----	4.0	2.7	14.0	12.0	
High Street Milling Co., Muncie, Ind. High Street Milling Company's Shorts.....	977	2608	Muncie -----	4.5	2.6	14.9	12.9	
Hill, Peter, Sandborn, Ind. Wheat Shorts.....	614	2713	Sandborn -----	4.5	2.8	14.9	13.3	
Hollingsworth, S. P., Russlerville, Ind. Wheat Shorts.....	1517	2514	Russlerville -----	4.0	2.9	14.0	13.3	
Jones & Long, Wabash, Ind. Wheat Middlings.....	480	2168	Wabash -----	4.0	3.1	14.0	13.3	
Klewit & Frederick, West Harrison, Ind. Klewit & Frederick's Wheat Middlings.....	472	3035	West Harrison	3.9	3.6	14.0	13.6	
Manja, Charles, Kingsbury, Ind. Mixt Shorts and Middlings.....	1319	1798	Kingsbury -----	4.0	2.8	14.0	12.2	
Miller, A. E., New Marlon, Ind. A. E. Miller's Wheat Shorts.....	597	2893	New Marlon....	4.0	3.2	14.0	12.8	
Morgantown Milling Co., Morgantown, Ind. Wheat Shorts.....	1304	2068	Mahalaesville ---	3.8	2.4	13.5	12.5	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Munkelt, Henry R., Salem, Ind. Wheat Middlings -----	588	2478	Salem -----	4.0	3.1	14.0	13.1	
Niccum-Henley Co., Swayzee, Ind. Wheat Middlings -----	1524	2353	Swayzee -----	4.0	2.8	14.0	13.0	
Wheat Middlings -----	2451	3081	Swayzee -----	3.0	3.0	13.0	11.1	
Oldenburg Flour Mills, Oldenburg, Ind. Wheat Shorts -----	490	3024	Batesville -----	4.0	3.3	14.0	13.1	
Perkey Mills, The, Hamilton, Ind. Perkey Mills Wheat Middlings -----	1715	2563	Hamilton -----	4.0	2.8	14.0	12.8	
Redden & Sons, New Paris, Ind. Redden's Wheat Middlings -----	973	2908	New Paris -----	4.0	3.5	14.0	13.0	
Salem Milling Co., Salem, Ind. Wheat Shorts -----	1206	2430	Salem -----	4.0	3.2	14.0	13.3	
Schaefer & Schwartzkopf, Columbus, Ind. Acorn Wheat Middlings -----	478	1556	Columbus -----	4.0	2.1	14.0	12.3	
Acorn Wheat Middlings -----	2162	3098	Columbus -----	3.0	1.8	11.0	12.3	
Schulenburg & Donselman, R. R. No. 3, Dillsboro, Ind. Wheat Shorts -----	958	2957	Hays Branch -----	4.0	3.3	14.0	13.3	
Sheridan Milling Co., Sheridan, Ind. Shorts -----	365	2658	Sheridan -----	4.0	3.0	14.0	12.3	
Sifter Roller Mills, Spencer, Ind. Wheat Shorts -----	337	1733	Spencer -----	4.0	2.8	14.0	13.7	
Smith, L. W., Kokomo, Ind. Wheat Middlings -----	73	2511	Kokomo -----	4.0	2.7	14.0	12.3	
Smith, Wm., Versailles, Ind. Smith's Wheat Middlings -----	880	2891	Versailles -----	4.0	3.4	14.0	13.4	
Star Milling Co., The, Aurora, Ind. Middlings -----	1037	2902	Aurora -----	4.5	3.1	14.6	12.9	
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Middlings -----	1193	1836	Topeka -----	4.0	3.1	14.0	13.3	
Waltz & Co., J. W., New Palestine, Ind. New Palestine Wheat Middlings -----	686	2307	New Palestine -----	2.0	2.9	12.0	13.5	
Zionsville Milling Co., Zionsville, Ind. Wheat Shorts -----	1336	2233	Zionsville -----	4.0	3.3	14.0	13.9	
WHEAT MIDDINGS AND SCREENINGS								
Bergenroth Bros., Troy, Ind. Wheat Shorts and Screenings -----	2023	2769	Troy -----	4.0	4.4	14.0	15.1	
Shilt, W. F., Bremen, Ind. Shorts -----	826	1804	South Bend -----	4.0	4.3	14.0	16.5	
Trow Company, W., Madison, Ind. Trow's Middlings and Screenings -----	1972	1497	Madison -----	4.5	4.6	16.0	16.1	
Trow's Middlings and Screenings -----	1972	2035	Madison -----	4.5	5.0	16.0	15.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
WHEAT MIDDLINGS AND SWEEP-INGS								
Fourteen Mile Valley Mills, Lexington, Ind., R. F. D. No. 2.								
Mixed Middlings	1300	1504	Hardy	4.0	4.0	14.0	17.0	
Mixed Germ Middlings	1302	1506	Hardy	4.0	5.5	14.0	16.5	
MIXED FEED, WHEAT PRODUCT								
Acme Milling Co., The, Aurora, Ind.								
Bran and Middlings	970	1529	Aurora	3.9	4.0	14.2	14.6	Corn cockle
Acme Milling Company, Indianapolis, Ind.								
Acme Feed	273	2069	Bedford	4.0	4.3	15.0	15.5	
Acme Feed	273	2091	Bloomington	4.0	4.5	15.0	16.0	
Acme Feed	273	2124	Indianapolis	4.0	4.4	15.0	16.0	
Acme Feed	273	2013	Shelburn	4.0	4.7	15.0	15.2	
Akin-Erskine Milling Co., The, Evansville, Ind.								
"Pure Winter Wheat Mixed Feed"	34	1853	Evansville	4.0	4.5	16.7	15.9	
Bachman, Valentine, Indianapolis, Ind.								
Bachman's Clean Wheat Product	757	2125	Indianapolis	3.7	4.6	14.0	15.0	
Baker, Allen, Com. Co., St. Louis, Mo.								
*Apex Mixed Feed	2261	2729	Linton	4.0	4.6	14.0	15.6	
Ballard & Ballard Company, Louisville, Ky.								
Ballard's Shipstuff	2016	1688	Charlestown	3.7	4.5	15.6	16.5	
Ballard's Shipstuff	2016	2484	Borden	3.7	4.5	15.6	15.9	
Barnes & Company, R. J., Dunkirk, Ind.								
Bran and Middlings	289	2544	Dunkirk	3.6	4.3	15.6	14.9	Corn cockle and chaff
Bickhart, Chris. J., St. Paul, Ind.								
Wheat Middlings and Wheat Shorts	1663	1699	St. Paul	4.0	4.1	18.5	15.8	
Blanton Milling Co., The, Indianapolis, Ind.								
Blanton's Mixed Feed	46	2122	Indianapolis	3.7	4.3	15.7	15.3	
Blish Milling Co., Seymour, Ind.								
Blish's Mixed Feed	568	1564	Seymour	3.8	4.9	14.2	17.2	
Bloomington Milling Co., The, Bloomington, Ind.								
Mixed Feed	7	2086	Bloomington	4.0	4.3	14.0	15.9	
Bristow Flouring Mills, Bristow, Ind.								
Hale's Mixed Feed	1858	1480	Bristow	3.5	3.2	14.0	14.2	Corn cockle
Brizius Co., The, Chas. W., Evansville, Ind.								
Eagle Ship Stuff	1115	2323	Newburgh	3.9	4.7	14.0	16.3	
Broadway Mills, Vincennes, Ind.								
Wheat Bran and Middlings	299	2085	Vincennes	3.7	3.8	14.1	14.9	
Wheat Bran and Middlings	299	2371	Vincennes	3.7	4.0	14.1	15.3	Screenings
Brose & Arnold, Evansville, Ind.								
Shipstuff	192	1971	Evansville	4.0	5.3	14.0	16.3	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Crude Fat		Crude Protein		REMARKS
	Official	Inspection C.	Guaranteed	Found	Guaranteed	Found	
Brose, George, Evansville, Ind. Shipstuff	961	1975 Evansville	5.0	4.6	19.0	15.7	
Brown, O. L., Campbellsburg, Ind. Mixed Feed	1987	2483 Campbellsburg	3.5	3.7	13.5	13.9	Corn bran
Bunker Hill Milling Co., Evansville, Ind. Mixed Feed	1171	1979 Evansville	3.9	4.5	14.0	15.4	
Burge Milling Co., Marion, Ind. Burge Milling Co.'s Bran and Shorts	232	2336 Marion	3.8	4.5	14.0	15.4	
Burkhart, J. E., Georgetown, Ind. Shipstuff	975	2865 Georgetown	3.8	4.4	14.0	14.7	
Cardick Milling Co., Grandview, Ind. Shipstuff	135	1474 Grandview	4.0	4.3	14.0	14.7	
Shipstuff	139	2344 Grandview	4.0	4.9	14.0	15.1	
Carlisle Mill & Elevator Co., Carlisle, Ind. Shipstuff	791	2697 Carlisle	4.5	4.6	14.9	14.7	Corn cockle
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Mixed Wheat Bran and Wheat Shorts	419	1461 Cayuga	3.9	4.1	14.0	16.9	
Columbus Milling Co., Columbus, Ind. Mixed Feed	653	1559 Columbus	3.5	4.0	14.0	15.4	
Compton Bros., Eagletown, Ind. *Bran and Shorts	2209	2236 Eagletown	3.8	3.4	14.0	14.3	Corn cockle
Dalrymple, J. W., Rising Sun, Ind. Bran and Shorts	810	1523 Rising Sun	3.8	4.2	14.0	14.3	
Bran and Shorts	810	2955 Rising Sun	3.8	4.7	14.0	14.1	Chaff, cheat
Daniels & Pickering Co., Middletown, Ind. Daniels' Mixed Feed	105	2407 Middletown	3.5	3.8	13.0	14.7	
Doolittle Mills, Doolittle Mills, Ind. *Shipstuff	2004	1522 Doolittle Mills	3.5	4.0	14.0	15.3	Corn cockle
Dubois Milling Co., Dubois, Ind. Bran and Shorts	1192	1912 Dubois	3.6	4.3	13.0	15.4	Corn cockle
Eagle Roller Mills, South Boston, Ind. *Mixed Feed	2315	2509 South Boston	3.5	3.3	13.0	13.3	
Eberts & Bro., Charlestown, Ind. "Ship Stuff"	2015	1625 Charlestown	4.5	4.9	15.8	17.1	
Eberts & Bro., Jeffersonville, Ind. "Mix Feed"	243	1607 Jeffersonville	4.3	4.6	15.8	15.4	Corn cockle
"Ship Stuff"	245	1609 Jeffersonville	4.5	4.4	15.8	16.5	
Eckert, J. & A., Jasper, Ind. Wheat Bran and Shorts Mixed	937	1879 Jasper	4.0	4.3	14.0	15.3	
Edwardsport Milling Co., Edwardsport, Ind. Edwardsport Milling Co. Wheat Bran and Shorts Mixed	726	2715 Edwardsport	3.9	4.3	14.0	14.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Ellettsville Mill Co., Ellettsville, Ind. Mixed Feed	1211	2092	Ellettsville	3.2	3.6	12.5	14.8	
Enos & Lee, New Albany, Ind. Eureka Mixed Feed	987	1611	New Albany	4.0	4.2	15.0	15.8	Corn cockle
Enterprise Mill Co., Bicknell, Ind. Wheat Middlings & Wheat Bran	1189	2718	Bicknell	3.8	3.1	14.0	14.7	
Ewing Mill Co., The, Ewing, Ind. *Ewing Mill Co.'s Mixed Feed	2497	2871	Ewing	3.8	4.1	14.0	15.0	
Fields, E. S., Owensburg, Ind. Mill Run	1123	1730	Owensburg	3.5	3.9	14.0	17.1	Screenings
Fohl, Casper, Cedar Grove, Ind. Bran and Middlings	606	3050	Cedar Grove	3.1	4.2	14.5	14.7	
Bran and Middlings	606	3051	Cedar Grove	3.1	4.1	14.5	14.9	
Fortville Milling Co., Fortville, Ind. Fortville Milling Co.'s Pure Mixed Feed	1231	2395	Fortville	3.8	3.4	14.0	14.9	
Frye, Joseph, R. F. D. No. 2, Middletown, Ind. Frye's Mixed Feed	648	2379	Middletown	3.5	4.6	12.0	15.1	Corn cockle
Fuhrer-Ford Milling Co., Mt. Vernon, Ind. Pure Wheat Mixed Feed	621	1908	Mt. Vernon	3.9	4.3	14.0	15.3	Corn cockle
Pure Wheat Mixed Feed	621	2385	New Castle	3.9	4.9	14.0	15.6	Screenings
Garland Milling Company, The, Greensburg, Ind. Garland Mixed Feed	199	2280	Greensburg	3.7	4.3	14.0	15.2	Screenings
Garrett & Funk, Liberty Center, Ind. Ship Stuff	1561	2300	Liberty Center	3.8	3.3	14.0	14.6	
Geneva Milling & Grain Company, Geneva, Ind. Adam's Shorts and Middlings	158	2458	Geneva	4.0	4.3	14.0	15.3	
Graeton, G. W., Dupont, Ind. Mixed Feed	1289	1510	Dupont	3.8	3.8	14.0	14.3	
Mixed Feed	1289	2307	Dupont	3.8	3.7	14.0	14.0	
Hanover Mills, Hanover, Ind. Shipstuff	1281	1500	Hanover	4.0	2.6	14.0	12.1	
Shipstuff	1281	2934	Hanover	4.0	2.8	14.0	11.6	
Hartford City Grain & Milling Company, Hartford City, Ind. "Cooleys Wheat Bran and Middlings Mixed"	341	2537	Hartford City	3.7	4.2	14.0	14.3	Screenings
Heise Bros. & Co., Orleans, Ind. Shipstuff	940	2473	Orleans	4.0	3.9	14.0	14.5	
Heise Milling Co., Madison, Ind. Heise's Ship Stuff	85	1495	Madison	4.0	4.4	14.0	15.9	
Hibblitts Mill Company, Muncie, Ind. Ship Stuff	525	392	Muncie	4.0	4.7	14.0	15.5	
Hildebrand, Charles L., Elizabeth, Ind. Hildebrand's Wheat Bran and Middlings	125	285	Elizabeth	3.7	3.3	14.0	14.5	Corn cockle
Hildebrand's Wheat Bran and Middlings	125	285	Elizabeth	3.7	3.6	14.0	13.3	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Holland, T. A. & F. W., Fort Ritner, Ind. Holland's Mixed Feed.....	241 1707	Fort Ritner	3.8	4.1	14.0	14.7	
Home Mill & Grain Co., Mt. Vernon, Ind.— Home Mill & Grain Co.'s Wheat Shipstuff	690 3000	Mt. Vernon	5.6	5.8	17.8	18.1	
Home Mill & Grain Co.'s Wheat Shipstuff	690 3001	Mt. Vernon	5.6	5.6	17.8	17.8	
Home Mill & Grain Co.'s Wheat Shipstuff	690 3313	Mt. Vernon	5.6	5.7	17.8	17.9	
Hornung, J. M., Greensburg, Ind. Mixed Feed.....	416 2362	Greensburg	3.7	4.0	14.0	15.6	
Houck & Knox, Converse, Ind. *Mixed Feed.....	2310 2628	Converse	3.5	3.8	13.0	14.5	
Hunter Bros. Milling Co., St. Louis, Mo. Pure Wheat Mixed Feed or Mill-run.....	384 1708	Washington	4.0	4.1	15.0	13.5	
Huntington Mill Co., Huntington, Ind. Bran and Shorts.....	493 2196	Huntington	3.9	4.6	14.3	15.4	
Igleheart Bros., Evansville Ind. Mixed Feed.....	649 1964	Evansville	4.0	4.4	16.1	15.9	Corn cockle
Jay Grain Co., The, Mulberry Branch, Mulberry, Ind. Jay's Wheat Bran and Shorts.....	33 2363	Mulberry	4.0	4.4	14.0	15.1	
Jordan & Son, Kempton, Ind.— Jordan & Son's Mixed Feed.....	1208 2656	Kempton	3.9	3.3	14.0	13.3	
Kamman, Frank W., Cross Plains, Ind. Shipstuff or Shorts.....	2359 2967	Cross Plains	4.0	3.6	14.0	13.2	
Karnes, Lubert, Martinsburg, Ind. Red Wing Dairy Feed.....	527 1863	Martinsburg	3.9	3.9	14.0	15.8	Corn cockle
Kemper Mill & Elevator Co., Kansas City, Mo. Rainbow Mixed Feed.....	2054 1718	Bloomfield	4.0	4.0	14.5	16.8	
Kennedy & Co., L. C., Center Point, Ind. Ship.....	424 1740	Center Point	3.7	2.8	14.0	13.0	
Kent Milling Co., Kent, Ind. Ship Stuff.....	1297 1503	Kent	4.0	4.4	14.0	16.6	
Kimble & Son, H. C., Brookville, Ind. Kimble's Bran and Middlings.....	1275 3055	Brookville	5.3	4.3	18.0	16.2	
Kirklin Grain Company, Kirklin, Ind. Bran and Shorts.....	1296 2655	Kirklin	3.8	3.2	14.0	14.2	
Lawrenceburg Roller Mills Co., The Lawrenceburg, Ind. "Snowflake" Mixed Feed.....	10 1524	Lawrenceburg	4.3	4.3	15.3	16.1	Screenings
Lingeman & Adams, Brownsburg, Ind. Ship Stuff.....	1500 2643	Brownsburg	4.0	2.4	14.0	13.1	White middlings present
Lyons Mills, Lyons, Ind. Mixed Feed.....	1535 1739	Lyons	3.9	3.0	14.0	13.9	
Macy Milling Co., Macy, Ind. Mixed Feed.....	709 2053	Macy	3.8	4.0	14.0	15.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Markland Roller Mills, Markland, Ind. Mixed Feed -----	1930 1531 Markland -----		3.8	4.0	14.0	15.4	Corn cockle
Mixed Feed -----	1930 2040 Markland -----		3.8	4.5	14.0	14.4	Corn cockle
Melrose Milling Co., Evansville, Ind. Mixed Feed -----	1018 2448 Francisco -----		3.8	3.1	14.0	13.8	Corn bran, corn cockle
Millark Mills, Millark, Ind. Shipstuff -----	1883 2068 Millark -----		4.0	3.8	14.0	14.5	
Milltown Milling Co., Milltown, Ind. "Milltown Milling Co.'s Millfeed" -----	680 2857 Milltown -----		3.7	3.9	14.0	14.9	
Model Milling Co., Tecumseh, Neb. Model Milling Co.'s Bran and Shorts -----	1915 1639 Knox -----		4.0	2.9	15.0	14.7	Low grade flour and sweepings containing glass, wood waste, string and other foreign materials
Model Milling Co.'s Bran and Shorts -----	1915 1639 Michigan City -----		4.0	3.0	15.0	12.9	
Model Milling Co.'s Bran and Shorts -----	1915 2009 Knox -----		4.0	4.9	15.0	17.6	
Model Milling Co.'s Bran and Shorts -----	1915 2010 Knox -----		4.0	4.5	15.0	15.0	
Montpellier Milling Co., Montpellier, Ind. Wheat Bran and Shorts Mixed -----	1163 2546 Montpellier -----		3.0	3.5	13.0	14.3	
Wheat Shorts or Middlings -----	1165 2547 Montpellier -----		3.0	4.2	13.0	14.4	
Moore Milling Co., The, R. P., Princeton, Ind. R. P. Moore Mfg. Co.'s King Feed -----	333 3023 Princeton -----		3.7	4.6	14.0	15.6	Corn cockle
Moyer, W. H., Cory, Ind. W. H. Moyer's Ship -----	1153 2446 Cory -----		4.0	2.5	14.0	11.8	
Murray Bros., Spencerville, Ind. Middlings and Shorts Mixed -----	610 2810 Spencerville -----		4.0	4.0	14.0	15.5	
Myers & Bros.' Milling Co., T. C., Epsom, Ind. Ship -----	1846 2731 Epsom -----		4.0	3.9	14.0	14.0	
McMurtry & Walther, Marshall, Ind. McMurtry & Walther Wheat Bran and Shorts -----	1671 2758 Marshall -----		3.7	4.0	14.0	14.7	
Neill & VanValer, Jonesboro, Ind. Bran and Shorts -----	1073 2589 Jonesboro -----		3.8	4.6	14.0	15.3	Large amount of chaff
Nesbit & Co., I. A., Sullivan, Ind. Shipstuff -----	300 2608 Sullivan -----		5.0	4.4	15.4	15.1	
Noblesville Milling Company, Noblesville, Ind. N. M. Co.'s Mixed Feed Pure Wheat Bran and Middlings -----	159 2600 Noblesville -----		3.7	4.7	15.0	15.0	
Orangeville Flouring Mills, The, R. R. No. 2, Orleans, Ind. *Mixed Feed -----	2205 2429 Orleans -----		4.0	3.4	14.0	14.4	
Otwell Mill Co., Otwell, Ind. Shipstuff -----	1302 1923 Otwell -----		4.0	3.0	14.0	14.1	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Parker City Mills, Parker, Ind. *Mill Feed	2269 2428	Parker City	3.2	4.0	13.0	15.0	
Phoenix Flour Mill, Evansville, Ind. Phoenix Mixed Feed	123 1933	Evansville	4.3	4.3	15.1	15.6	
Poseyville Milling Co., Poseyville, Ind. Shipstuf	1937 2006	Poseyville	4.0	5.5	14.0	17.6	
Princeton Milling Co., The, Princeton, Ind. Ship and Bran (Run together)	354 2024	Princeton	4.0	4.3	14.0	15.6	Cheat
Ship and Bran (Run together)	356 2359	Princeton	4.0	4.0	14.0	14.9	Cheat and corn cockle
Richland Milling Co., Bloomfield, Ind. Shipstuf	1147 1713	Bloomfield	4.0	4.2	14.0	14.9	Corn cockle
Schnell, J. H., Birdseye, Ind. Mill Feed	963 2334	Birdseye	3.7	4.6	14.0	14.8	Corn cockle
Schuppert, M., Depauw, Ind. Depauw Feed	1020 2353	Depauw	4.0	4.9	15.0	14.3	
Seward & Rakestraw, Oakford, Ind. Perfection Bran and Middlings	833 2498	Kokomo	3.9	3.9	14.0	14.4	
Shetterly Bros., Lapel, Ind. Bran and Shorts	1383 3033	Lapel	3.3	3.2	14.0	14.3	
Shine & Co., John H., New Albany, Ind. Star Feed	363 1610	New Albany	4.0	3.9	14.0	14.7	Corn cockle
Smith, D. R., Tipton, Ind. Mixed Feed, Bran, Shorts and Middlings	1543 2633	Tipton	3.7	4.3	17.9	15.2	
Smock & Caca, Noblesville, Ind. Bran and Shorts	1424 2033	Noblesville	3.3	4.2	14.5	14.7	
Snoddy, M. W., Covington, Ind., R. F. D. No. 1, Bran and Middlings	1073 2774	Covington	3.5	3.3	14.0	14.5	
Snyder, Chas. A., Waynetown, Ind. Bran and Shorts	43 2904	Waynetown	3.0	4.2	10.0	15.1	
Spencer & Co., J. W., Veedersburg, Ind. Mixed Feed	335 2773	Veedersburg	3.0	4.4	13.0	14.9	
Spink Milling Co., The, Washington, Ind. Shipstuf	430 1702	Washington	3.7	3.9	14.0	16.2	
Shipstuf	430 2225	Washington	3.7	4.0	14.0	14.4	
Mixt Feed	431 1691	Washington	3.6	4.3	12.5	16.2	
Mixt Feed	431 2225	Washington	3.6	4.2	12.5	16.5	
Spring Mill, Paoli, Ind., R. R. No. 4. *Mixed Feed	2335 2414	Paoli	4.0	4.0	14.0	14.4	Corn cockle
Spring Mills Co., (C. M. Barlow), Kokomo, Ind. Bran and Middlings	797 2500	Kokomo	4.0	3.3	15.0	13.3	White middlings present
Stamper Creek Mill, R. R. 2, Paoli, Ind. *Mixed Feed	2264 2426	Paoli R. R. 2	3.3	3.7	14.0	14.4	
Steinheilber Milling Co., Hartford City, Ind. Mixed Bran and Middlings	1917 2540	Hartford City	4.0	4.3	14.0	15.0	Corn cockle

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Steinhall & Velceine Milling Co., Oriole, Ind. *Shipstuff -----	1994	1518	Oriole -----	3.8	3.4	14.0	13.8	
Stepanek, Peter, Modoc, Ind. Stepanek's Wheat Bran and Shorts -----	130	3083	Modoc -----	4.0	4.5	16.7	14.7	
Stonehead Roller Mills, Stonehead, Ind. Mixed Feed -----	1573	3097	Stonehead -----	8.7	3.3	14.0	13.5	Corn cockle
Stone Quarry Mills, Spiceland, Ind. Mixed Feed -----	1497	3099	Spiceland -----	3.9	3.6	14.0	14.3	Corn cockle
Sullivan Mill & Elevator Co., Sullivan, Ind. Bran and Shorts -----	1089	2703	Sullivan -----	3.9	3.3	14.0	13.5	Corn cockle, chaf- fy grain
Taylor, John H., Ogilville, Ind. Taylor's Mixed Feed -----	801	1560	Ogilville -----	3.8	4.3	14.0	15.4	Corn cockle
Taylor's Mixed Feed -----	801	3096	Ogilville -----	3.8	3.3	14.0	13.8	
Tell City Flouring Mills, Tell City, Ind. Shipstuff -----	442	1483	Tell City -----	4.0	5.1	14.0	16.9	
Shipstuff -----	2400	2846	Tell City -----	4.5	4.8	14.7	15.6	
Thomas, A. R., Markle, Ind. Thomas' Bran and Middlings -----	618	2239	Markle -----	3.8	3.6	14.1	14.9	
Thurgood, Geo. R., Vincennes, Ind. Mixed Feed -----	1587	3040	Vincennes -----	3.9	4.5	14.0	15.3	
Trimble Milling Co., The, Milton, Ky. *Shipstuff -----	1989	1513	Madison -----	4.0	4.5	14.0	15.4	
Truitt & Son, Wm. P., East Enterprise, Ind. Bran and Shorts -----	1258	1519	East Enterprise -----	3.8	3.8	14.0	14.3	Corn cockle
Bran and Shorts -----	1258	3033	East Enterprise -----	3.8	4.0	14.0	14.1	
Ulrey & Co., A. A., Fairmount, Ind. Ulrey's Mixed Feed -----	456	2637	Fairmount -----	3.8	4.1	14.0	14.9	
Valler & Spies Milling Co., St. Louis, Mo. Valler's Mixed Feed -----	889	2178	Greencastle -----	4.0	4.9	15.0	15.5	
Walker & Norris, Washington, Ind. Walker & Norris' Wheat Bran & Middlings -----	318	1701	Washington -----	4.0	4.4	14.7	16.3	Corn cockle
Walker & Norris' Wheat Bran & Middlings -----	318	2923	Washington -----	4.0	4.4	14.7	16.1	
Wallace Milling Co., The, Dale, Ind.— Wallace's Mixed Feed -----	173	1833	Dale -----	3.9	4.6	14.3	15.4	
Walton & Whisler, Atlanta, Ind. Mixed Feed -----	110	3035	Atlanta -----	3.8	3.8	14.0	14.0	Corn cockle
Waterloo Mills, The, Waterloo, Ind. The Waterloo Mills Mixed Feed -----	168	2814	Waterloo -----	4.0	4.3	14.0	15.7	
Wellington & Son, Anderson, Ind. Wellington's "A. X. A." Mixed Feed -----	75	2390	Anderson -----	4.0	4.4	15.0	14.3	Corn bran
Winslow Milling Co., Winslow, Ind. Pike's Wheat Bran & Middlings -----	1021	1922	Winslow -----	4.0	3.9	15.2	14.2	
Wood, N., Deep River, Ind. Mixed Wheat Bran & Shorts -----	1412	1661	Deep River -----	3.8	3.9	14.0	14.8	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Worsham & Miller, Pakerton, Ind. Wheat Bran, Wheat Middlings and Wheat Shorts	1787	2613	Pakerton	4.0	3.8	15.4	14.4	
Wright Milling Co., Paris Crossing, Ind. Shipstuffs	151	1078	Paris Crossing	4.0	4.0	14.0	15.0	
Youngs Creek Milling Co., Youngs Creek, Ind. Mixed Feed	1908	1476	Youngs Creek	3.9	4.0	13.0	15.1	Corn cockle
Zabel & Son, Lansville, Ind. Zabel & Son's Mill Feed	863	1490	Lanesville	3.8	4.4	14.0	14.7	Corn cockle
Zabel & Son's Mill Feed	863	2800	Lanesville	3.8	4.7	14.0	14.1	
Zillak & Schafer Milling Co., Evansville, Ind. Ship Stuff made of Wheat	1125	1977	Evansville	4.8	5.4	17.0	17.1	
RED DOG FLOUR								
Listman Mill Co., La Crosse, Wis. **Elmo Red Dog Flour		2169	Liberty		5.8		17.7	
Sleepy Eye Milling Co., Sleepy Eye, Minn. Sleepy Eye Low Grade Flour	517	1780	Saratoga	4.5	3.0	20.0	15.8	
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Red Dog Flour	1406	1656	Valparaiso	2.0	4.5	16.0	18.1	
Washburn-Crosby Co., Minneapolis, Minn. Washburn-Crosby Co.'s "Adrian"	735	2944	Valparaiso	5.0	6.2	18.0	19.2	
WHEAT SCREENINGS								
Loughry Bros. Milling & Grain Co., The, Monticello, Ind. Loughry's Wheat Screenings	43	2077	Monticello	3.0	3.1	12.0	12.6	
MILL SWEEPINGS								
Volland Milling Co., The, Ft. Wayne, Ind. *Mill Sweepings	2135	1909	Ft. Wayne	1.0	6.5	1.0	12.3	
MIXED FEED—WHEAT PRODUCT AND SCREENINGS								
Boonville Milling Co., The, Boonville, Ind. *"A" Mixed Feed	2244	2326	Boonville	3.8	4.3	14.0	14.6	
Eberts & Bro., North Vernon, Ind. Mixed Feed	462	1587	North Vernon	3.5	4.4	13.5	15.7	
Mixed Feed	462	2382	North Vernon	3.5	3.7	13.5	14.1	
Emison, J. & S., Vincennes, Ind. Mixed Feed	565	2027	Vincennes	4.0	3.7	14.0	14.8	
Mixed Feed	565	2916	Vincennes	4.0	4.1	14.0	14.5	
Evans & Son, Geo. T., Indianapolis, Ind. Evans' Hoosier Mill Feed	1377	2126	Indianapolis	4.0	4.3	15.7	16.0	
Fredericksburg Milling Co., The, Fredericksburg, Ind. *Mixed Feed	2281	2469	Fredericksburg	3.8	3.9	14.0	14.2	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Garland Milling Company, Greensburg, Ind. Garland Mixed Feed.....	2389	3078	Greensburg	3.7	4.3	14.0	14.7	
Harmon & Wallace, Owensville, Ind. Royal Wheat Feed.....	409	2005	Owensville	3.8	4.1	14.0	15.4	
Harris Milling Co., Greencastle, Ind. Harris' Mixed Feed.....	212	2170	Greencastle	3.5	3.8	14.1	14.7	
Hartman & Sons, Louis, New Albany, Ind. Mixed Feed.....	1979	1608	New Albany	3.5	4.0	14.0	16.1	
Inglefield Milling Co., Inglefield, Ind Inglefield's Mixed Feed.....	1597	1685	Inglefield	3.7	4.4	14.0	14.3	
Medora Mill Co., Medora, Ind. Medora Mixed Feed.....	526	1573	Medora	3.6	3.4	14.0	14.2	
Medora Mixed Feed.....	526	2476	Medora	3.6	4.2	14.0	15.9	
Morning Star Mill, Sommerville, Ind. Mixed Feed.....	2005	1958	Sommerville	3.0	3.5	12.0	13.3	
Nieman, C., Sunman, Ind. Nieman's Mixed Feed.....	501	1677	Sunman	3.7	4.5	14.0	14.3	
Nieman's Mixed Feed.....	501	3026	Sunman	3.7	4.8	14.0	15.0	
Organ Spring Mills, R. R. No. 6, Salem, Ind. *Mixed Feed.....	2305	2468	Organ Spring	3.8	3.4	14.0	14.1	
Owensville Milling Co., Owensville, Ind. "Daisy Feed".....	2028	2008	Owensville	4.0	4.0	14.0	15.3	
Princeton Milling Co., Princeton, Ind. Star Brand Mixed Feed.....	1978	2300	Princeton	3.5	4.1	13.0	15.6	
Scholl & Tieteman, Welsburg, Ind. "Big Four" Mixed Feed.....	1802	2652	Welsburg	3.6	4.2	13.5	13.7	
Standard Milling Co., Ireland, Ind. Mill Feed.....	1589	1836	Ireland	3.0	3.8	14.0	15.2	
Star Mill Co., The, Huntingburg, Ind. Mixed Feed.....	45	1605	New Albany	3.7	4.4	13.7	15.5	
Mixed Feed.....	45	1910	Huntingburg	3.7	4.2	13.7	15.0	
Trow Company, W., Madison, Ind. Trow's Mixed Feed.....	1965	1496	Madison	4.0	4.9	14.0	15.5	
Wright Milling Co., Paris Crossing, Ind. "A" Mixed Feed.....	2508	2379	Paris Crossing	3.8	4.4	14.0	15.0	
Ziliak & Schafer Milling Co., The, Haubstadt, Ind. Ziliak's Mixed Feed.....	276	1972	Evansville	3.7	4.7	14.0	15.1	
MIXED FEED, WHEAT AND CORN PRODUCT								
Anderson & Brown, Plainfield, Ind. Bran and Shorts.....	1251	2529	Plainfield	4.0	4.0	15.4	14.6	Corn cockle
Bran.....	1253	2531	Plainfield	4.0	4.0	15.4	15.1	
Anderson, C., New Waverly, Ind. Mixed Bran.....	1822	2908	Pipe Creek Mill	4.0	3.8	12.0	14.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Berne Milling Co., Berne, Ind. Berne Milling Co.'s Wheat and Corn Bran	1117	1771	Berne -----	3.8	3.8	14.0	14.5	
Bloomington Milling Co., The, Bloomington, Ind. Mixed Feed -----	8	2791	Bloomington --	3.0	4.2	13.0	15.0	
Borcharding Mill Co., H. F., Vallonia, Ind. *Mixed Feed -----	2009	1875	Vallonia -----	3.9	3.6	14.0	14.0	Corn cockle
Boswell Bros., Marion, Ind. Mixed Bran -----	1566	2339	Marion -----	4.0	3.8	9.0	9.0	
Brisius Co., The, Chas. W., Evansville, Ind. Eagle Mixed Feed -----	1114	2322	Newburgh ----	3.6	4.4	13.8	15.4	Screenings
Buchele, Chas. J., Bluffton, Ind. Corn and Wheat Bran -----	783	2297	Bluffton ----	3.0	5.7	10.0	11.5	
Bundy Mill Co., L. L., Vallonia, Ind. Mixed Feed -----	2478	2873	Vallonia -----	3.8	3.8	14.0	14.9	
Cadick Milling Co., Grandview, Ind. Mixed Feed -----	188	1465	Grandview ---	4.1	4.4	14.9	14.9	Corn cockle
Cannelton Flour Mills, The, Cannelton, Ind. Mixed Feed -----	68	1454	Cannelton ----	4.1	4.4	13.7	13.9	Cheat and corn cockle
Mixed Feed -----	68	2340	Cannelton ----	4.1	4.8	13.7	14.2	
Mixed Bran -----	68	2841	Cannelton ----	3.4	4.0	14.4	15.1	
Mixed Bran -----	68	1455	Cannelton ----	3.4	4.1	14.4	14.6	Cheat and corn cockle
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Mixed Wheat and Corn Bran and Wheat Shorts -----	418	1460	Cayuga -----	4.3	4.9	13.0	13.8	
Clark & Sons, C. G., Rushville, Ind. Clark's Corn and Wheat Bran (Mixed) -----	185	3069	Rushville ----	3.7	4.4	14.0	14.3	Corn cockle
Colnon, John P., Ridgeway, Ill. Colnon's Corn and Wheat Bran -----	1940	2008	Mt. Vernon ---	4.0	3.7	11.0	14.6	Corn cockle
Corbin Milling Co., New Harmony, Ind. Corbin's Mixed Feed -----	315	2004	New Harmony--	3.9	4.4	13.3	14.9	Corn cockle
Cunningham, C., Terhune, Ind. *Mixed Feed -----	2289	2489	Terhune -----	3.2	3.1	10.0	9.4	
Cunningham, James W., Crothersville, Ind. J. W. Cunningham's Mixed Feed -----	557	1580	Crothersville --	3.0	3.3	10.0	14.5	
Dillsboro Milling Co., Dillsboro, Ind. Dillsboro Milling Co. Bran -----	1007	1541	Dillsboro ----	3.8	3.8	14.0	14.6	Corn cockle
Dillsboro Milling Co. Bran -----	1007	2965	Dillsboro ----	3.8	4.5	14.0	13.9	
Dragoo, B. S. & S. H., Yorktown, Ind. Mixed Corn and Wheat Bran -----	601	2439	Yorktown -----	3.7	3.7	14.0	15.0	
Mixed Corn and Wheat Bran -----	601	3085	Yorktown -----	3.7	3.7	14.0	14.6	
Drake, Otis, The Bowling Green Mills, Bowling Green, Ind. Mixed Feed -----	1204	1743	Bowling Green	3.8	4.6	14.0	13.8	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Elnora Milling Co., The, Elnora, Ind. Mixed Feed	391	3073	Elnora	3.0	3.7	10.0	12.0	
English Milling Co., English, Ind. English Milling Co., Mixed Feed.....	906	1476	English	4.0	4.5	14.1	14.7	Corn cockle
Enterprise Mill Co., Bicknell, Ind. Wheat Bran and Corn Bran.....	1189	2717	Bicknell	4.4	3.9	11.0	12.5	
Follett & Co., R. J., Carmel, Ind. Wheat Bran and Corn Bran.....	1980	2657	Carmel	3.7	3.9	11.0	14.7	
Forrest Park Mills, Terre Haute, Ind. Mixed Feed	1775	2283	Elsworth	4.0	3.8	9.8	9.9	
Fritch, J. D., Frankfort, Ind. J. D. Fritch's Bran Feed.....	1515	2387	Frankfort	4.0	3.8	13.0	14.0	
Graston, G. W., Dupont, Ind. Cereal Bran.....	1756	2309	Dupont	3.8	4.5	8.0	13.3	
Hardin & Son, Ladoga, Ind. Hardin & Son's Mill Feed.....	406	2644	Ladoga	3.7	2.9	14.0	14.5	
Harris, J. C., Montgomery, Ind. Mixed Feed	894	1694	Montgomery ..	3.6	5.2	12.0	16.7	
Haynes Milling Co., The Portland, Ind. Bran	1584	2433	Portland	3.8	3.7	15.2	15.4	
Heise Milling Co., Madison, Ind. Heise's Wheat and Corn Bran.....	848	1494	Madison	4.2	4.0	12.0	14.6	
Hollingsworth, S. P., Russellville, Ind. Hollingsworth's Bran Feed.....	1519	2615	Russellville	3.8	4.5	13.0	16.1	
Hubbard & Co., W. H., Monrovia, Ind. Bran	924	2119	Monrovia	4.0	4.5	13.0	13.8	
Hunsicker & Bender, Bluffton, Ind. Mixed Bran	1558	2294	Bluffton	4.0	3.8	14.0	15.0	
Imperial Mills, The, Cambridge City, Ind. Mixed Bran	1752	3058	Cambridge City	3.9	4.3	12.0	14.5	
Keesler Milling Co., St. Joe, Ind. Keesler's Mixed Bran.....	2004	2813	St. Joe	3.8	6.1	14.0	12.9	
Kidwell & Goode, Elwood, Ind. Star Bran	1572	2030	Elwood	3.7	3.8	12.0	13.9	
Kinsey Bros., Mentone, Ind. Bran	1908	2616	Mentone	3.8	3.6	13.0	14.1	Corn cockle
Klondike Milling Company, The, Danville, Ind. Mill Run Mixed Feed.....	275	2523	Danville	3.7	3.9	12.5	15.0	
Lash Flour Mills, Fred B., Farmersburg, Ind. Lash's Mixed Bran.....	908	2701	Farmersburg ..	3.7	3.7	11.7	14.0	
Lemon, C. M., Bedford, Ind. Mixed Mill Feed.....	213	2967	Bedford	4.5	4.6	11.0	15.4	Corn cockle
Mixed Mill Feed.....	213	2517	Bedford	4.5	4.7	11.0	15.3	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Linton Mill Co., Linton, Ind. Mixed Feed	1792	2737	Linton	4.0	5.0	13.0	15.0	
Martinsville Milling Co., The, Martinsville, Ind. Mixed Feed	30	2088	Martinsville.....	4.0	4.4	12.0	16.2	
Matthew Milling Co., Mitchell, Ind. Matthew's Banner Mixed Feed.....	544	1861	Mitchell	3.8	3.4	12.5	15.4	Corn cockle
Means & Witt, Lebanon, Ind. Mixed Feed	86	2225	Lebanon	3.5	5.8	8.0	13.0	
Metamora Roller Mills, The, Metamora, Ind. Wheat Bran and Corn Bran.....	1606	2859	Metamora	4.0	4.3	14.5	14.2	
Millhousen Milling Company, Millhousen, Ind. Herbert's Mixed Feed.....	1729	2271	Millhousen	4.0	3.7	14.0	14.9	
Herbert's Mixed Feed.....	1729	3002	Millhousen	4.0	4.0	14.0	14.7	
Murray, D. R., Clinton, Ind. Mixed Bran	1849	1756	Clinton	3.9	3.9	13.7	15.3	
McCoy & Co., H. W., Lake, Ind. H. W. McCoy & Co.'s Mixed Feed.....	2223	2881	Lake	3.9	4.5	13.3	15.6	
Nading, Simon, Hope, Ind. Simon Nading's Mixed Feed.....	1963	1557	Hope	3.7	4.4	14.1	16.4	Corn cockle
Odon Milling Co., The, Odon, Ind. Mill Feed	56	2066	Odon.....	4.1	4.3	13.0	15.0	
Mill Feed	56	2516	Bedford	4.1	4.3	13.0	15.2	
Paoli Milling Co., The, Paoli, Ind. Mixed Feed	623	2410	Paoli.....	4.0	5.1	8.0	14.5	
Paragon Roller Mills, Paragon, Ind. Mixed Feed	1526	2100	Paragon.....	3.8	6.7	12.0	14.2	
Poseyville Milling Co., Poseyville, Ind. Bran	1936	2007	Poseyville.....	3.7	3.9	14.0	14.7	
Ridgeville Roller Mills & Elevator, Ridgeville, Ind. Bran	1832	1706	Ridgeville	3.0	3.2	13.0	13.4	
Bran	1832	2405	Ridgeville	3.8	3.3	13.0	15.9	
Roach & Rothenberger, Delphi, Ind. Mixed Feed	285	2686	Delphi.....	3.8	4.3	11.0	14.6	
Schilt, W. F., Bremen, Ind. Bran	825	1833	South Bend.....	3.7	3.7	14.0	14.6	
Scientific Milling Co., Marlon, Ind. Mixed Bran	1507	2332	Marlon	4.0	4.2	9.0	10.6	Oats.
Scottsburg Milling Co., Scottsburg, Ind. Scottsburg Milling Co.'s Mixed Feed.....	794	1585	Scottsburg	4.0	4.0	14.0	13.4	
Scottsburg Milling Co.'s Mixed Feed.....	794	2877	Scottsburg	4.0	4.9	14.0	13.7	
Semon, F. T., Vernon, Ind. Mixed Feed	1613	2008	Vernon.....	4.0	3.7	11.0	13.9	
Star Milling Co., Shoals, Ind. Star Mixed Feed	504	1778	Shoals	3.5	4.1	12.0	16.1	Corn cockle

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Taylor-Hitz Co., Madison, Ind.								
Bran -----	414	1493	Madison -----	3.7	4.2	14.0	15.3	Cheat
Bran -----	414	2031	Madison -----	3.7	5.4	14.0	13.6	
Tell City Flouring Mills, Tell City, Ind.								
Mixed Feed -----	440	1481	Tell City -----	3.9	4.3	13.6	14.9	Cheat and corn cockle
Bran -----	441	1483	Tell City -----	3.8	3.8	14.0	13.0	Screenings
Bran -----	441	2843	Tell City -----	3.8	3.8	14.0	13.9	Corn cockle
Thornburg Milling Company, Martinsville, Ind.								
Mixed Feed -----	654	2096	Martinsville ---	3.9	4.1	14.0	13.8	
Thorntown Milling Co., Thorntown, Ind.								
*Wonder Feed -----	2213	2263	Thorntown ----	4.0	6.5	12.0	11.8	
Waltz & Co., J. W., New Palestine, Ind.								
New Palestine Mixed Feed -----	686	2309	New Palestine ---	3.9	3.9	14.0	14.7	
Wellington & Son, Anderson, Ind.								
Mixed Bran -----	1738	2401	Anderson -----	3.9	3.9	14.0	14.3	Corn cockle
West Baden Milling Co., West Baden, Ind.								
Mixed Feed -----	1012	1911	West Baden ---	4.8	4.5	16.5	15.9	Corn cockle
Westphalia Mill & Elevator Co., Westphalia, Ind.								
Mill Feed -----	226	2707	Westphalia ----	3.7	4.6	13.5	15.1	
Williamsport Milling Company, Williamsport, Ind.								
Mixed Feed -----	3013	2425	Williamsport ---	3.8	5.3	14.0	14.2	
Mixed Feed -----	1763	2788	Williamsport --	3.8	5.1	14.0	14.8	
MIXED FEED, WHEAT AND CORN PRODUCT, SCREENINGS ETC								
Baker, E. H., Oakland City, Ind.								
Mixed Feed -----	2270	2449	Oakland City -	4.0	4.2	14.0	14.5	
Besser, W. T., Greencastle, Ind.								
Besser Extra Mixed Feed -----	1943	2179	Greencastle ---	3.5	3.5	12.0	14.5	
Bloomfield Milling Co., Bloomfield, Ind.								
Mixed Mill Feed -----	1854	1716	Bloomfield ----	4.1	4.1	12.8	15.9	
Boldt & Son, Crawfordsville, Ind.								
Boldt's Mixed Feed -----	53	2073	Crawfordsville.	3.5	4.1	13.0	13.5	
Boles & Jones, Milroy, Ind.								
Wheat and Corn Bran and Screenings -----	2081	2270	Greensburg ----	3.1	3.6	14.5	13.7	
Wheat and Corn Bran and Screenings -----	2081	3080	Milroy -----	3.1	3.7	14.5	13.8	
Cadick Milling Co., Grandview, Ind.								
Bran and Screenings -----	2099	2346	Grandview ----	3.8	3.8	14.0	14.3	
Mixed Feed -----	2100	2347	Grandview ----	4.1	4.2	14.0	14.9	
Canine Bros.' Milling Co., Clinton, Ind.								
Mixed Bran and Shorts -----	1874	1758	Clinton -----	3.8	4.0	13.7	14.9	
Cannelton Flour Mills, The, Cannelton, Ind.								
Mixed Middlings -----	70	1456	Cannelton -----	4.1	4.2	16.2	15.8	
Mixed Middlings -----	70	2817	Cannelton -----	4.1	4.3	16.2	14.7	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Charles & Sons, James, Marlon, Ind. Mixed Feed	1547	2327	Marlon	4.0	4.1	10.0	15.0	
City Roller Mills, Vevay, Ind. Mixed Feed or Wheat and Corn Product	1158	2337	Vevay	3.0	4.1	14.0	14.1	
Claypole, Geo. M., Sardinia, Ind. Geo. M. Claypole's Mixed Feed	1389	3001	Sardinia	3.5	5.0	14.0	15.1	
Crabbs-Reynolds-Taylor Co., LaFayette. Ind. Mixed Feed	2105	2733	Oxford	3.0	4.3	13.0	15.0	
DeBaum Feed Mills, Terre Haute, Ind. *Mixed Feed	2236	2441	Terre Haute	4.0	3.2	10.0	10.0	
Edwardsport Milling Co., Edwardsport, Ind. The Edwardsport Milling Co.'s "Mixed Feed"	724	2714	Edwardsport ..	3.9	3.8	12.4	12.8	
Egloff & Sons, A., St. Meinrad, Ind. Bran and Screenings	877	1885	St. Meinrad ...	4.0	3.4	14.5	14.6	
English Milling Co., English, Ind. English Milling Co. Mixed Feed	906	2345	English	4.0	4.1	14.1	15.0	
Farmers Mill, The, Huntingburg, Ind. Mixed Feed	1827	1913	Huntingburg ...	3.9	3.8	13.0	14.0	
Fort Branch Milling Co., Fort Branch, Ind. Mixed Feed	2165	2361	Fort Branch ...	3.7	4.1	14.0	15.0	
Gosport Roller Mills, Gosport, Ind. Mixed Feed	1167	2079	Gosport	3.6	6.4	9.5	14.2	
Grim, Loyd, Springport, Ind. Grim's Bran and Screenings	353	3023	Springport ...	3.3	4.2	12.0	12.7	
Jessup, Nevins & Co., Bloomingdale, Ind. Millfeed	1053	2755	Bloomingdale ...	4.0	4.0	14.0	13.9	
Jessup, Nevins & Co., Kingman, Ind. Bran	1067	2756	Bloomingdale ...	3.7	3.7	14.0	14.3	
Katterjohn, Q. F., Boonville, Ind. *Katterjohn's Mixed Feed	2243	2325	Boonville	4.0	4.0	13.5	13.7	
Kennedy & Co., L. C., Center Point, Ind. Mixed Feed	1160	1741	Center Point ...	3.5	3.9	13.5	15.3	
Klewit & Frederick, West Harrison, Ind. Klewit & Frederick's Bran and Screenings	473	3040	W. Harrison ...	3.7	4.6	14.0	15.9	
Livonia Flouring Mills, Livonia, Ind. *Mixed Feed	2268	2423	Livonia	3.8	3.7	14.0	14.3	
Nugent, Thomas, Jamestown, Ind. Nugent's Bran, Shorts and Screenings	1746	2649	Jamestown ...	3.7	4.1	13.0	15.4	
Nugent's Bran and Screenings	1747	2650	Jamestown ...	3.7	3.5	13.0	14.6	
Oakland City Roller Mills, Oakland City, Ind. Dairy Mixed Feed	1941	1957	Oakland City ..	3.0	4.2	12.0	14.8	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Oaktown Flouring Mill Co., Oaktown, Ind. Mill Run	1142	2704	Oaktown	3.5	3.7	13.0	13.9	
Petersburg Milling & Grain Co., Peters- burg, Ind.	1127	3044	Petersburg	3.5	4.8	13.0	15.3	
Mixed Feed								
Prange, F., Indianapolis, Ind. . Mixed Feed	806	2147	Indianapolis ..	3.7	4.6	13.5	15.9	
Props Milling Co., LaGro, Ind. Props Mixed Feed	1939	2167	LaGro	3.0	3.6	10.0	14.4	
Richland Milling Co., Bloomfield, Ind. Mixed Feed	1148	1714	Bloomfield	3.0	3.9	12.5	14.7	
Rockport Milling Co., The, Rockport, Ind. *Bran and Screenings	2348	2342	Rockport	3.8	3.8	13.3	14.7	
*A Mixed Feed	2247	2343	Rockport	3.9	4.3	13.3	14.7	
Rohm Bros., Rockville, Ind. Mill Feed	299	2747	Rockville	4.0	4.8	14.0	14.6	
Rohm Bros. & Co., Mansfield, Ind. Mill Feed	294	2749	Mansfield	4.0	3.5	14.0	14.0	
Rosedale Mills, Rosedale, Ind. Rosedale Mixed Feed	1768	1757	Rosedale	4.0	3.9	12.0	14.1	
Smith, L. W., Kokomo, Ind. Mixed Feed	71	2513	Kokomo	3.8	4.2	13.0	14.5	
Suckow, Wm., Franklin, Ind. Mixed Feed	13	1573	Crothersville ..	4.0	4.1	12.4	16.2	
Tapp & Bridwell, Bloomington, Ind. Mixed Feed	54	2030	Bloomington ..	4.0	3.6	14.0	15.6	
Thurgood, Geo. R., Vincennes, Ind. Thurgood's Mixed Feed	1806	2043	Vincennes	3.5	5.0	12.0	13.9	
Thurston, B. F., Darlington, Ind. Mixed Feed, Mill Run	562	2976	Darlington	3.5	3.6	13.0	14.5	
Wabash Milling Company, Wabash, Ind. Mixed Feed	1257	2166	Wabash	3.0	3.5	13.0	15.0	
Williams & Baker, Oakland City, Ind. Mixed Feed	1069	1964	Oakland City..	3.5	4.8	13.0	15.2	
Williams Milling Co., Williams, Ind. Williams Milling Co.'s Mixed Feed	135	2722	Williams	3.9	4.1	13.0	13.9	
Winkler, Geo. W., Freelandville, Ind. Winkler Mixed Feed	1060	2716	Freelandville ..	4.0	4.8	14.1	15.6	
MIXED FEED, WHEAT AND RYE PRODUCT								
Bischoff Bros., A. G., Morris, Ind. *Mixed Feed	2062	1676	Morris	3.0	4.8	14.0	15.7	
Gotto, O. W., Michigan City, Ind. Wheat and Rye Middlings	1285	1635	Michigan City..	3.0	5.2	15.0	20.1	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Hanson, Robt., Michigan City R. F. D. No. 1 Ind. Wheat and Rye Middlings.....	466 1641	Michigan City	3.0	4.1	13.0	14.7	Corn cockle
Wheat and Rye Bran.....	467 1642	Michigan City	6.0	3.4	13.0	14.9	
Roeske Bros., Michigan City, Ind. Wheat and Rye Middlings.....	1409 1680	Michigan City	3.5	2.9	14.0	14.7	
White Bros., LaPorte, Ind. Wheat and Rye Bran.....	1298 1643	LaPorte	3.5	3.8	14.0	14.1	Corn cockle
RYE PRODUCTS							
Dyer Milling Company, Dyer, Ind. Rye Middlings.....	1260 1601	Dyer	2.0	3.3	12.0	13.9	
Shotwell, Chas. A., Indianapolis, Ind. Rye Middlings.....	2074 2120	Mooresville	3.0	3.0	15.0	16.1	
Smith, Roper & Co., Hobart, Ind. Hobart Rye Feed.....	80 1649	Hobart	2.5	2.7	14.0	15.4	
Vessely & Borkovec, North Judson, Ind. Rye Bran.....	1323 1983	North Judson	2.5	3.4	14.0	14.3	
Rye Middlings.....	1324 1990	North Judson	4.0	1.9	14.0	11.7	
BUCKWHEAT BRAN							
Kellman Klimmet Co., The, Lowell, Ind. Buckwheat Bran.....	1371 1591	Lowell	3.0	1.9	12.0	9.2	
Knoblock & Glaz Milling Co., South Bend, Ind. *Buckwheat Bran.....	2342 2508	South Bend	3.0	5.4	7.0	19.4	
Loughry Bros.' Milling Co., Monticello, Ind. Loughry's Buckwheat Bran.....	1629 2073	Monticello	3.0	3.7	12.0	14.0	
MIXED FEED, BUCKWHEAT PRODUCT							
Boelter, C. F., Union Mills, Ind. Mixed Buckwheat Bran and Middlings....	1366 1997	Union Mills	4.0	4.9	17.0	19.0	
Bourbon Elevator & Milling Co., The, Bourbon, Ind. Bourbon Mixed Feed.....	1464 2033	Bourbon	3.5	5.2	15.0	22.8	
Daily, C. C., Bonneyville, Ind., P. O. Bristol, Ind. Mixed Buckwheat Bran and Middlings....	1610 1839	Bonneyville	4.0	4.3	18.0	17.8	
Tippecanoe Mills, Monticello, Ind. *Mixed Feed.....	2216 2267	Monticello	4.0	4.0	18.0	17.2	
CORN BRAN							
Barlow, C. M., Kokomo, Ind. Corn Bran.....	1702 2502	Kokomo	5.0	3.4	8.0	9.9	
Batchelor, Fox & Davis, Sharpsville, Ind. Corn Bran.....	347 2684	Sharpsville	5.0	7.6	8.0	10.3	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Brizius Co., The, Chas. W., Evansville, Ind. Eagle Corn Bran.....	2213 2324	Newburgh	4.0	7.9	8.3	8.7	
Cauble, O. L., Pekin, Ind. Corn Bran.....	1015 1865	Pekin	5.0	7.6	8.0	9.0	
Columbus Milling Co., Columbus, Ind. Corn Bran.....	653 3065	Columbus	5.0	9.4	8.0	11.9	
Eberts & Bro., Jeffersonville, Ind. Corn Bran.....	1243 1580	North Vernon	5.0	9.8	8.0	11.0	
Jay Grain Co., The, Mulberry Branch, Mul- berry, Ind. Jay's Corn Bran.....	37 2308	Mulberry	5.0	7.3	8.0	9.0	
Moore Milling Co., R. P., Princeton, Ind. Corn Bran.....	999 2028	Princeton	5.0	4.3	8.0	8.8	
Corn Bran.....	999 2721	Princeton	5.0	9.4	8.0	10.6	
Morgantown Milling Co., Morgantown, Ind. Corn Bran.....	1305 2099	Mahalasville	4.8	2.9	8.0	6.7	
McCann Roller Mills, Connersville, Ind. Corn Bran.....	2043 3056	Connersville	5.0	10.1	9.0	11.5	
McMurtry, Dooley & Walther, Marshall, Ind. Corn Bran.....	1089 2757	Marshall	5.0	7.0	8.0	10.5	
Pennsylvania Elevator & Supply Co., In- dianapolis, Ind. Corn Bran.....	1649 2137	Indianapolis	5.0	6.4	8.0	10.1	
Rouse & Son, Wm., Indianapolis, Ind. Corn Bran.....	2124 2141	Indianapolis	5.0	4.8	8.0	9.6	
Schaefer & Schwartzkopf, Columbus, Ind. No. 6 Corn Bran.....	476 3008	Columbus	5.0	7.8	8.0	10.3	
Schalk Bros., Anderson, Ind. Corn Bran.....	1757 2408	Anderson	5.0	10.7	8.0	11.2	
Smith & Richey, Tipton, Ind. Corn Bran.....	508 2635	Tipton	5.0	11.7	8.0	11.5	
Spink Milling Co., The, Washington, Ind. Corn Bran.....	2437 2028	Washington	5.0	5.7	8.0	8.5	
Walker & Norris, Washington, Ind. Corn Bran.....	315 1608	Washington	5.8	2.2	9.0	5.0	
Corn Bran.....	315 2920	Washington	5.8	3.3	9.0	6.3	
HOMINY MEAL, FEED AND CHOPS							
American Hominy Co., Indianapolis, Ind. Homco.....	716 2008	Mt. Vernon	7.7	8.0	8.5	9.7	
Homco.....	716 2314	Mt. Vernon	7.7	8.8	8.5	10.6	
Homco.....	716 2450	Thorntown	7.7	8.1	8.5	9.9	
Homco.....	716 2730	Linton	7.7	8.2	8.5	10.5	
American Hominy Co., Terre Haute, Ind. **Feed Meal.....	2745	Terre Haute	7.4			10.4	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official Inspection C.		Guaranteed	Found	Guaranteed	Found	
Bishop Hominy Co., Sheldon, Ill. *Hominy Feed -----	2233 2708	Morocco -----	7.5	8.3	9.0	11.4	
Conroy, M. A., Jeffersonville, Ind. Hominy Meal -----	1191 1613	Jeffersonville --	7.0	7.6	9.0	10.2	
Decatur Cereal Co., Decatur, Ill.							
oxo Hominy Feed -----	1812 1775	Winchester ----	7.7	7.8	11.0	10.1	
oxo Hominy Feed -----	1813 1808	Martinsburg --	7.7	8.8	11.0	10.4	
oxo Hominy Feed -----	1813 2675	Farmland -----	7.7	8.0	11.0	10.1	
oxo Hominy Feed -----	1813 2651	Jamestown ----	7.7	8.8	11.0	10.1	
Des Moines Cereal Co., Des Moines, Iowa. **Hominy Feed -----	2918	Hobart -----		8.5		9.7	
Eberts & Bros., North Vernon, Ind. Hominy Feed ----- †Hominy Feed -----	2018 2897 2018 3004	Osgood ----- S. W. Westport	7.5 7.5	8.7 9.4	10.0 10.0	10.0 10.3	
Emison & Co., J. & S., (Baitie Mills) Vincennes, Ind. Hominy Feed -----	325 2088	Vincennes ----	9.2	8.3	11.6	9.3	
Evans Milling Co., The, Indianapolis, Ind. Hominy Feed ----- Hominy Feed -----	20 1579 20 2640	Crothersville -- Jamestown ----	7.5 7.5	9.4 9.3	10.0 10.0	11.1 10.8	
Ewing Mill Co., The, Brownstown, Ind. Hominy Meal -----	296 2873	Ewing -----	7.5	8.5	9.0	10.1	
Glenger & Co., John, Jeffersonville, Ind. Hominy Feed -----	1897 2876	Jeffersonville --	7.0	9.3	9.0	9.9	
Hall Milling Co., W. C., Brazil, Ind. Hall's Hominy Feed -----	582 2201	Brazil -----	8.3	8.1	9.8	11.1	
Hartman & Sons, Louis, New Albany, Ind. "A" Hominy Feed -----	2021 1602	New Albany ----	7.0	6.9	8.0	9.8	
Hodapp Hominy Company, Seymour, Ind. Hominy Feed -----	269 1563	Seymour -----	5.0	8.2	8.0	10.3	
Hunter Bros.' Milling Co., St. Louis, Mo. **Hominy Feed -----	383 2471	Paoli E. E. 1. --	7.0	8.6	9.5	10.4	
LaFayette Hominy Mill Co., The, LaFayette, Ind. Hominy Feed -----	9 2074	LaFayette ----	8.4	7.9	9.5	9.9	
Loving, J. M., Indianapolis, Ind. Hominy Meal -----	1540 2148	Indianapolis --	7.5	9.4	8.0	10.2	

*—Before registration

**—Not registered

†—Not tagged

TABLE VII. - Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
McCoy, Robert A., Greensburg, Ind. Hominy Meal	2050	2268	Greensburg	7.0	8.8	9.0	10.3	
Noblesville Milling Co., Noblesville, Ind. Hominy Chop	1488	2001	Noblesville	7.5	7.7	9.5	10.1	
Ralft Milling Co., F., Louisville, Ky. Hominy Meal	1980	1615	Jeffersonville	8.0	8.1	8.0	10.8	
Suffern Hunt & Co., Decatur, Ill. Hominy Feed	1870	2412	Paoli	7.1	9.0	9.3	10.7	
Hominy Feed	1870	2401	Salem	7.1	9.0	9.3	10.9	
 Acme Hominy Feed	2464	2012	Bainbridge	7.1	8.6	9.3	10.7	
PARCHED HOMINY FEED								
Indiana Milling Co., Terre Haute, Ind. †Parched Hominy Feed	2381	2734	Jasonville	3.0	6.5	5.0	8.7	
†Parched Hominy Feed	2381	2745	Lewis	3.0	6.3	5.0	8.6	
GLUTEN FEED								
American Malze Product Co., Chicago, Ill. **Gluten Feed	2597		South Bend		2.4		26.8	
Corn Products Manufacturing Co., Chicago, Ill. Buffalo Gluten Feed	954	1477	South Bend	2.5	3.7	23.0	25.4	
Buffalo Gluten Feed	954	2677	Elkhart	2.5	3.0	23.0	27.1	
Corn Products Refining Co., Chicago, Ill. Buffalo Gluten Feed	2159	2569	South Bend	2.5	3.2	23.0	26.8	
†Buffalo Gluten Feed (Fine)	2159	2337	Purdue Farm	2.5	2.9	23.0	28.0	
†Buffalo Gluten Feed (Coarse)	2159	2338	Purdue Farm	2.5	2.5	23.0	27.1	
Buffalo Gluten Feed	2159	2949	Crown Point	2.5	2.9	23.0	27.3	
Forrest & Co., J. A., Dixon, Ill. Gluten Feed	2084	1798	South Bend	3.0	4.2	23.0	24.0	
Piel Bros.' Starch Co., Indianapolis, Ind. Gluten Feed	2008	1721	Indianapolis	2.8	1.6	22.5	19.9	
Union Starch & Refining Co., Edinburg, Ind. Union Gluten Feed	559	1621	Edinburg	3.0	4.2	24.0	21.5	
CORN GERM MEALS								
American Hominy Co., Indianapolis, Ind. **Corn Oil Cake Meal	2231		Thornton		12.3		15.9	
Homcoline Feed	2401	2901	Clayton	6.5	6.7	16.0	16.6	
Corn Products Refining Co., Chicago, Ill. Pure Corn Oil Meal	2308	2350	Wagoner	8.0	10.9	13.0	22.9	
*Pure Corn Oil Meal	2308	2367	Wagoner	8.0	10.3	13.0	22.9	
Union Starch & Refining Co., Edinburg, Ind. Union Corn Germ Meal	559	1620	Edinburg	15.0	12.6	13.0	22.4	
CORN AND OATS								
Anderson & Densline, Kouts, Ind. Chop Feed	435	2970	Kouts	3.7	4.1	9.0	10.1	

*—Before registration

**—Not registered

†—Not tagged

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Auburn Roller Mills, M. E. Hursh, Auburn, Ind. Auburn Roller Mills Chop-----	774	2817	Auburn -----	3.9	3.9	9.5	11.0	
Barlow, C. M., Kokomo, Ind. Chop Feed-----	177	2508	Kokomo -----	3.8	3.9	9.3	9.6	
Bash & Co., C. E., Huntington, Ind. C. E. Bash & Co.'s Chop-----	1749	2187	Huntington ----	3.9	3.9	9.5	10.4	
Beauchamp Feed Store, Ward, Andrews, Ind. Corn and Oats Chop-----	1718	2188	Andrews -----	3.0	4.2	9.0	8.7	
Beckman Supply Co., The, Hammond, Ind. Corn and Oats Chop-----	1346	2306	Hammond-----	3.0	4.8	9.0	9.5	
Beeson & Seagrave, Losantville, Ind. B. & S. Chop Feed-----	263	3084	Losantville ----	3.9	3.3	9.5	10.0	
Berne Milling Co., Berne, Ind. Berne Milling Co.'s Chop-----	1116	1770	Berne -----	3.9	4.5	9.5	9.3	
Berne Grain & Hay Co., Berne, Ind. Bladem Chop-----	607	2459	Geneva -----	4.3	3.9	10.2	9.8	
Bleker Bros., Hammond, Ind. Corn and Oats Chop-----	1340	2802	Hammond ----	3.0	4.1	9.0	9.7	
Bleker, F. A., Crown Point, Ind. Corn and Oats Chop-----	1362	1570	Crown Point--	3.5	3.8	9.0	10.2	
Bishop Elevator Co., Logansport, Ind. Chop Feed-----	554	2108	Logansport ----	3.9	3.7	9.5	9.8	
Blayne, C. F., Angola, Ind. Corn and Oats Chop-----	1641	2670	Angola -----	3.9	4.3	9.5	11.2	
Rock, Leonard, Argos, Ind. Chop Feed-----	549	2050	Argos -----	3.9	3.7	9.5	9.3	
Boldt & Son, Crawfordsville, Ind. Boldt's Corn and Oat Chop-----	53	2674	Crawfordsville--	3.9	5.7	9.5	9.0	
Bonneyville Mills, Bonneyville, Ind. Bonneyville Mills Chop Feed-----	1190	1835	Bonneyville ----	3.9	3.7	9.5	10.4	
Boswell Brothers, Marion, Ind. Boswell Bros.' Corn and Oats Chop Feed-----	745	2337	Marion -----	3.9	4.3	9.5	9.5	
Bourbon Elevator & Milling Company, Bourbon, Ind. Bourbon Chop-----	167	2031	Bourbon -----	3.9	5.1	9.5	10.3	
Branch Grain & Seed Co., Martinsville, Ind. Horse Feed-----	272	2095	Martinsville ----	3.5	4.6	9.0	9.1	
Bristol Milling Co., Bristol, Ind. Bristol Milling Co.'s Chop Feed-----	1157	1834	Bristol -----	3.9	3.4	9.5	10.7	
Browning & Company, Alexandria, Ind. Browning's Corn and Oats Chop-----	396	2617	Alexandria ----	3.9	3.9	9.5	9.0	
Brudi & Company, Jos., New Haven, Ind. Corn and Oat Chop Feed-----	686	2248	New Haven ----	3.9	3.9	9.5	9.8	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Burge Milling Co., Marion, Ind. Burge Milling Co.'s Chop.....	281 2385	Marion	3.9	4.0	9.5	9.0	
Burrell & Morgan, Elkhart, Ind. Chop Feed	265 1891	Elkhart	3.9	3.9	9.5	9.3	
Butler Milling Co., Butler, Ind. Butler Milling Co.'s Chop Feed.....	1081 2891	Butler	3.6	3.8	9.5	9.7	
Carpenter, A. J., Hamilton, Ind. A. J. Carpenter's Corn and Oat Chop....	307 2550	Hamilton	3.9	4.2	9.5	14.4	Buckwheat bran
Carroll, Simon J., Royal Center, Ind. Uncle Simon's Chop Feed.....	815 3009	Royal Center ..	3.8	4.0	9.0	9.8	
Carter Feed & Coal Co., The, Elwood, Ind. Corn and Oats Chop.....	147 2039	Elwood	3.9	4.4	9.5	9.2	
City Elevator, The, Portland, Ind. Corn and Oats Chop.....	1685 1407	Portland	3.9	3.6	9.5	9.4	Grass seed
City Mills, Huntington, Ind. City Mills Chop Feed.....	1812 2189	Huntington	3.9	4.2	9.5	10.2	
Crabbs-Reynolds-Taylor Co., Crawfords- ville, Ind. Chop Feed	1929 2979	Crawfordsville..	3.7	3.6	9.0	9.7	
Crabbs-Reynolds-Taylor Co., Reynolds, Ind. Chop Feed	1888 2787	Reynolds	3.9	4.2	9.5	9.9	
Cullon & Son, W. H., Frankfort, Ind. Corn and Oats Chop.....	1514 2366	Frankfort	3.9	4.3	9.6	9.8	
Cunningham, C., Terhune, Ind. *Chop Feed	2208 2483	Terhune	3.0	4.2	9.0	9.2	
Daniels, Milo S., North Webster, Ind. Corn and Oats Chop.....	1583 2022	North Webster..	3.9	3.5	9.5	10.2	
Daniels & Pickering Co., Middletown, Ind. Daniels' Chop Feed.....	103 2372	Middletown ...	3.2	4.0	9.0	10.1	
Darlington Grist Mill, Darlington, Ind. Chop Feed	2361 2681	Darlington	3.9	3.8	9.5	9.6	
Davison, C. F., Pierceton, Ind. Reed's Corn and Oats Chop.....	1083 1962	Pierceton	3.9	4.2	9.5	10.8	
Delp, Ettinger & Co., Bourbon, Ind. Bourbon Chop	2426 2946	Valparaiso	3.9	4.3	9.5	9.3	
Eaton Elevator, Eaton, Ind. Corn and Oats Chop.....	1745 2648	Eaton	3.9	4.3	9.5	9.8	
Eckstein & Co., Charles P., Peru, Ind. XXXX Chop Feed	1911 2133	Peru	3.5	4.1	7.5	9.3	
Finkle Brothers, Warren, Ind. Corn and Oats Chop.....	1198 2308	Warren	3.9	4.4	9.5	10.0	
Flinn & Gaunt, Earl Park, Ind. Corn and Oats Chop.....	1580 2304	Earl Park.....	3.9	4.3	9.5	9.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official Inspection C.			Guaranteed	Found	Guaranteed	Found	
Fornax Roller Mills, Decatur, Ind. Fornax Chop -----	921	2204	Decatur -----	4.5	3.5	10.0	8.9	
Fox, Fred B., Tipton, Ind. Fox Corn and Oats Chop-----	665	2636	Tipton -----	3.9	4.1	9.5	9.6	
Frankton Grain Co., Frankton, Ind. Frankton's Grain Co.'s Chop-----	1219	2305	Frankton -----	3.9	4.0	9.5	8.8	
Fremont Flouring Mills, Fremont, Ind. Fremont Flouring Mills Chop Feed-----	1656	2559	Fremont -----	3.9	3.8	9.5	11.6	
Fritch, J. D., Frankfort, Ind. Fritch's Corn and Oats Chop-----	310	2305	Frankfort -----	3.5	3.8	9.5	13.0	
Gandy & Co., O., South Whitley, Ind. Corn and Oats Chop-----	1478	1985	South Whitley-----	3.5	4.6	9.0	9.8	
Geneva Milling & Grain Company, Geneva, Ind. Elzey Chop Feed -----	156	2456	Geneva -----	3.9	4.6	9.5	10.0	
Gilman, S. B., Summitville, Ind. Gilman's Corn and Oats Chop-----	549	2613	Summitville -----	3.8	4.1	11.0	9.3	
Globe Mills, The, Ft. Wayne, Ind. The Globe Mills Corn and Oats Chop-----	437	1897	Ft. Wayne -----	3.9	3.9	9.5	10.5	
Goshen Milling Company, The, Goshen, Ind. Chop Feed -----	67	1813	Goshen -----	3.9	4.3	10.5	10.4	
Chop Feed -----	67	2000	Goshen -----	3.2	3.9	10.5	9.1	
Gotto, O. W., Michigan City, Ind. Corn and Oats Chop-----	1264	1633	Michigan City--	3.5	4.1	9.0	9.4	
Graft Bros., Winchester, Ind. Graft Bros.' Chop Feed-----	1183	1765	Winchester -----	3.9	3.9	9.5	10.4	
Gray & Whitestone, Huntington, Ind. Gray & Whitestone's Chop-----	1034	2193	Huntington -----	3.9	4.0	9.5	9.5	
Hanna, L. G., Logansport, Ind. L. G. Hanna's Chop Feed-----	394	2107	Logansport -----	3.7	4.4	10.1	9.8	
Hanson, Robt., Michigan City, R. F. D. No. 1 Ind. Corn and Oats Chop-----	465	1640	Michigan City--	3.0	4.2	9.0	9.5	
Harbeck, Wm., Valparaiso, Ind. Corn and Oats Chop-----	1407	1657	Valparaiso -----	3.5	4.1	9.0	9.9	
Haskell & Co., W. H., Toledo, Ohio. **Steam Cooked Feed-----	1890		LaGrange -----	3.9			9.0	
Hufnagle & Miller, Redkey, Ind. Corn and Oats Chop-----	1694	2673	Redkey -----	3.9	4.4	9.5	9.7	
Hawk Bros., Mongo, Ind. Hawk Bros. Chop Feed-----	1916	2965	Mongo -----	3.9	4.3	9.5	9.6	
Hawkins Bros., Oxford, Ind. Elevator Chop Feed -----	1906	2796	Oxford -----	3.9	3.8	9.0	9.5	
Haynes Milling Co., The, Portland, Ind. Corn and Oats Chop Feed-----	93	2433	Portland -----	3.9	3.9	9.5	9.8	

*—Before registration

**—Not registered

*—Before registration
**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Kellman & Lowenberg, Dyer, Ind. Corn and Oats Chop.....	1370	1599	Dyer.....	3.9	4.3	9.5	10.1	
Keplinger, Charles, Zanesville, Ind. Chop Feed.....	844	2243	Zanesville ----	4.0	3.8	10.0	10.0	
Kidwell & Goode, Elwood, Ind Kidwell & Goode's Standard Oat and Corn Chop Feed.....	23	2035	Elwood ----	3.9	4.4	9.5	11.4	
Knoblock & Ginz Milling Co., South Bend, Ind. Corn and Oats Chop.....	1024	1800	South Bend....	3.9	4.1	9.5	9.9	
Koenemann, Ed. F., Hoagland, Ind. Corn and Oats Chop.....	1089	2273	Hoagland ----	3.9	4.1	9.5	10.3	
Kuhn & Co., John H., Michigan City, Ind. Chop Feed.....	1085	1640	Michigan City..	3.5	3.9	8.8	9.0	
LaDue & Carmer, Auburn, Ind. LaDue & Carmer's Chop Feed.....	1150	1905	Ft. Wayne....	3.9	4.3	9.5	10.3	
Lemon, C. M. Bedford, Ind. Corn and Oats Chop.....	214	2068	Bedford.....	4.0	4.6	8.5	9.6	
Corn and Oats Chop.....	214	2618	Bedford ----	4.0	4.2	8.5	9.1	
Ligonier Milling Co., Ligonier, Ind. Ligonier's Milling Co.'s Corn and Oats Chop.....	378	1828	Ligonier ----	3.9	4.0	9.5	10.1	
Linton Mill Co., The, Linton, Ind. Corn and Oats Chop.....	500	2726	Linton ----	3.9	4.1	9.5	9.3	
Little Crow Milling Co., Warsaw, Ind. Little Crow Chop Feed.....	359	1946	Warsaw ----	3.9	3.5	9.5	10.6	
Loughry Bros.' Milling & Grain Co., The, Monticello, Ind. Loughry's Corn and Oats Chop.....	41	2076	Monticello ----	3.7	5.0	9.5	10.9	
Magill & Son, Portland, Ind. Corn and Oats Chop.....	1703	2435	Portland ----	3.9	4.3	9.5	9.7	
Maginot, Mike, Hammond, Ind. Corn and Oats Chop.....	1343	1545	Hammond ----	3.0	4.2	9.0	9.2	
Maines & Hamilton, Rensselaer, Ind. No. 1 Chop Feed.....	1365	3008	Rensselaer ----	3.9	4.1	9.5	9.5	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Chop Feed.....	449	1887	LaGrange ----	3.9	4.9	9.5	9.7	
Mayflower Mills Chop Feed.....	449	1899	Ft. Wayne ----	3.9	4.3	9.5	11.3	
Mead Grain Co., Union City, Ind. Corn and Oats Chop.....	787	1750	Union City....	3.0	4.4	9.0	10.4	
Means & Witt, Lebanon, Ind. Corn and Oats Chop.....	33	2229	Lebanon ----	3.9	4.3	9.5	10.4	
Medaryville Milling Company, Medaryville, Ind. Medaryville Corn and Oat Chop.....	174	3016	Medaryville ---	3.9	4.3	9.5	9.7	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Meek & Son, R. S., Greensburg, Ind. Meek's Chop Feed.....	1240	2267	Greensburg	3.9	4.0	9.5	9.3	
Mexico Milling Company, The, Mexico, Ind. Chop Feed.....	142	1856	Mexico	3.9	3.9	9.5	9.3	
Middlebury Milling Co., Middlebury, Ind. Corn and Oat Chop.....	633	1833	Middlebury	4.3	3.9	10.5	9.9	
Corn and Oat Chop.....	638	3000	Goshen	4.2	4.3	10.5	10.5	
Miller, Wesley, South Bend, Ind. Oats and Corn Chop.....	924	1806	South Bend	3.8	4.2	9.6	10.3	
Miller & Dohner, Columbia City, Ind. Chop.....	1006	1990	Columbia City	3.9	3.7	9.5	10.4	
Miller and Walker, Flora, Ind. Corn and Oats Chop.....	706	2692	Flora	3.8	4.0	9.0	9.5	
Miller's Elevator, Williamsport, Ind. Corn and Oats Chop.....	1787	2423	Williamsport	3.9	4.3	9.5	9.7	
Monroe Grain, Hay & Milling Co., Monroe, Ind. Corn and Oats Chop.....	2188	2460	Monroe	3.5	4.2	9.0	9.0	
Morocco Feed & Grist Mill, Morocco, Ind. Corn and Oats Chop.....	2130	3795	Morocco	3.2	3.8	9.2	10.0	
Morrison, Finch & Co., Hillsboro, Ind. Mixed Feed.....	1139	2779	Hillsboro	3.0	4.2	9.0	9.0	
Murray Bros., Spencerville, Ind. Corn and Oats Chop.....	608	2808	Spencerville	3.9	3.7	9.5	10.2	
McCoy, R. A., Greensburg, Ind. Chop Feed.....	777	2265	Greensburg	5.8	3.7	10.0	9.5	
Chop Feed.....	777	3073	Greensburg	5.8	4.9	10.0	10.4	
Nappanee Produce Co., Nappanee, Ind. Nappanee Produce Co.'s Chop Feed.....	1058	3011	Nappanee	3.9	3.9	9.5	10.6	
Neil & Van Valer, Jonesboro, Ind. Chop Feed.....	767	2586	Jonesboro	3.9	4.3	9.5	9.3	
New Carlisle Milling Co., New Carlisle, Ind. Corn and Oats Chop.....	1315	1789	New Carlisle	3.9	4.3	9.0	10.5	
New Castle Elevator Co., New Castle, Ind. Corn and Oats Chop.....	709	2380	New Castle	3.2	4.1	9.0	9.7	
New Ross Grain Co., New Ross, Ind. Chop Feed.....	1498	2646	New Ross	3.9	3.4	9.5	9.3	
Nichols & Co., C. B., Lowell, Ind. Corn and Oats Chop.....	1523	1597	Lowell	3.5	3.9	9.0	9.7	
Corn and Oats Chop.....	1523	3013	Lowell	3.5	4.2	9.0	9.4	
Niezer & Co., Monroeville, Ind. Corn and Oats Chop.....	1501	2249	Monroeville	3.5	4.3	9.0	9.4	
North Manchester Milling Co., North Manchester Ind. "North Manchester Milling Company's Chop".....	865	2217	N. Manchester	3.9	4.2	9.5	10.1	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Owens & Son, J. W., Saratoga, Ind. Corn and Oats Chop	1804 2554	Saratoga	3.9	4.5	9.5	9.8	
Paxson, Chas. E., Elkhart, Ind. Paxson's Corn and Oats Chop	808 1897	Elkhart	3.9	3.9	9.5	9.8	
Pearson, Warren W., Upland, Ind. Eureka Feed	1764 2536	Upland	3.9	3.7	9.5	9.1	
Pennsylvania Elevator & Supply Co., In- dianapolis, Ind. Corn and Oats Chop	1648 2136	Indianapolis	3.9	4.0	9.5	9.3	
Pennville Milling Co., Pennville, Ind. Corn and Oats Chop	1690 2463	Pennville	3.9	3.8	9.5	10.6	
Peru Milling Company, The, Peru, Ind. Chop Feed	19 2130	Peru	3.9	3.7	8.8	9.5	
Pitman, H. E., Bedford, Ind. Chop Feed	387 2070	Bedford	3.2	4.3	8.8	9.0	
Chop Feed	387 2519	Bedford	3.9	4.5	8.8	8.9	
Price & Bruce, Crawfordsville, Ind. Corn and Oats Chop	623 2377	Crawfordsville	3.9	4.3	9.5	9.7	
Props Milling Co., LaGro, Ind. Chop Feed	892 2161	LaGro	3.0	4.9	8.8	8.9	
Quillin Bros., Crawfordsville, Ind. Corn and Oats Chop	684 2378	Crawfordsville	3.9	4.9	9.9	9.8	
Raasch, Paul E., Crown Point, Ind. Corn and Oats Chop	1359 1567	Crown Point	3.0	3.9	9.0	10.2	
Corn and Oats Chop	1359 2064	Crown Point	3.0	4.7	9.0	9.7	
Reed & Co., H. G., Clymers, Ind. Corn and Oats Chop	2323 2785	Clymers	3.9	4.5	9.5	9.8	
Redington & Morgan, Rolling Prairie, Ind. Corn and Oats Chop	1279 1786	Rolling Prairie	3.9	3.9	9.0	9.0	
Remington Grain Co., Remington, Ind. Corn and Oats Chop	1311 2789	Remington	3.9	4.4	9.0	9.9	
Richardson, Geo. L., Logansport, Ind. Richardson's Chop Feed	2147 2115	Logansport	3.7	3.9	9.0	9.4	
River Queen Mills, Rensselaer, Ind. Corn and Oats Chop	1065 3006	Rensselaer	3.9	4.0	9.5	9.9	
Roach & Rothenberger, Delphi, Ind. Corn and Oats Chop	284 2085	Delphi	3.9	4.3	9.5	9.3	
Roeske Bros., Michigan City, Ind. Corn and Oats Chop	1468 1631	Michigan City	3.9	4.3	9.5	9.5	
Schlientz & Sons, Fred, Centerville, Ind. Corn and Oats Chop	1451 3080	Centerville	3.7	4.9	9.0	9.7	
Schnalble Grain Company, The, Matt, La- Fayette, Ind. Mixed Ground Corn and Oats	3 2339	LaFayette	3.0	3.0	9.0	9.3	Wheat present

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Scholz & Co., Paul J., Whiting, Ind. Corn and Oats Chop.....	1401 1558	Whiting	8.5	8.1	9.0	9.8	
Schroeder, E. F., Crown Point, Ind. Corn and Oats Chop.....	1266 1505	Crown Point.....	3.5	4.3	9.0	9.7	
Corn and Oats Chop.....	1266 2373	Crown Point.....	3.5	4.3	9.0	9.6	
Scientific Milling Company, Marion, Ind. Corn and Oats Chop Feed.....	1245 2331	Marion	3.0	4.1	8.8	10.3	Wheat and corn bran
Seward & Rakestraw, Oakford, Ind. Perfection Corn and Oats Chop.....	1908 2420	Kokomo	3.5	4.4	9.0	9.3	
Sims Grain Co., J. T., Frankfort, Ind. Corn and Oats Chop.....	1180 2370	Frankfort	2.9	4.1	9.5	9.5	
Smith, James W., Peru, Ind. Chop Feed	200 2131	Peru	3.1	3.7	8.9	9.3	
Smith, L. W., Kokomo, Ind. Chop Feed	73 2519	Kokomo	3.0	3.9	9.0	9.0	
Smith Grain & Milling Co., Warsaw, Ind. Corn and Oat Chop.....	803 1949	Warsaw	3.7	4.0	9.5	10.8	
Smith, Roper & Co., Hobart, Ind. Hobart Chop Feed	83 2043	Hobart	3.3	3.9	9.5	8.9	
Smith & Richey, Tipton, Ind. Corn and Oats (Chop).....	509 2637	Tipton	3.7	4.3	11.0	9.3	
Spy Run Fuel & Feed Co., Ft. Wayne, Ind. Corn and Oats Chop.....	1491 1919	Ft. Wayne.....	3.9	4.3	9.5	11.2	
Stall & Co., R. S., Thorntown, Ind. Corn and Oats Chop.....	703 2230	Thorntown	3.9	3.9	9.5	9.3	
Star Supply Co., Elkhart, Ind. *Star Chop Feed.....	2330 2532	Elkhart	3.9	4.7	9.5	10.0	
Steele & Co., George W., Marion, Ind. Chop Feed	33 2351	Marion	3.0	5.0	9.0	10.4	
Stepanek, Peter, Modoc, Ind. Stepanek's Chop	129 3032	Modoc	4.7	4.2	11.0	8.8	
Stoudt, Thomas, South Bend, Ind. Thos. Stoudt's Corn and Oat Chop.....	273 1793	South Bend.....	3.9	3.9	9.5	9.6	
Stout, Harry T., Crawfordsville, Ind. Stout's Chop Feed.....	503 2375	Crawfordsville.....	3.9	4.3	9.5	9.0	
Street Milling Co., J., LaPorte, Ind. Corn and Oats Chop Feed.....	700 1781	LaPorte	3.9	3.9	9.5	9.7	
Studabaker & Son, John, Bluffton, Ind. Corn and Oats Chop	1943 2310	VanBuren	3.9	4.0	9.5	9.6	
Swayzee, Mark L., Marion, Ind. Corn and Oats Chop	633 2323	Marion	3.0	4.3	9.0	9.9	
Sweet, W. G., Royal Center, Ind. Sweet's Corn and Oat Chop.....	704 3018	Royal Center...	3.9	4.1	9.5	9.7	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Teeter Mill & Elevator Co., Hagerstown, Ind. Teeter's Corn and Oats Chop.....	592 3083	Hagerstown	8.2	4.0	7.0	9.7	
Thompson, James, LaFayette, Ind. Mixed and Ground Corn and Oats.....	193 1854	LaFayette	8.0	4.3	9.0	9.2	
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Chop Feed.....	1194 1837	Topeka	3.9	4.4	9.5	11.1	
Topeka Milling Co.'s Chop Feed.....	1194 2395	Topeka	3.9	4.3	9.5	10.8	
Tresselt & Sons, C., Ft. Wayne, Ind. Chop Feed	408 1941	Ft. Wayne	3.9	4.4	9.5	11.5	
Tuttle & Co., R., Columbia City, Ind. Perfection Chop Feed.....	816 1937	Columbia City	3.9	4.0	9.5	11.7	
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Corn and Oats Chop.....	1403 1653	Valparaiso	3.5	4.0	9.0	9.9	
Van Camp, A., Decatur, Ind. Corn and Oats Chop.....	669 1902	Ft. Wayne	3.9	3.9	9.5	10.8	
Corn and Oats Chop.....	669 2210	Decatur	3.9	3.9	9.5	10.5	
Viers & Wicks, Rochester, Ind. Viers & Wicks Chop Feed.....	321 2048	Rochester	4.0	3.5	10.0	10.0	Corn cockle, wild buckwheat
Wabash Milling Co., Wabash, Ind. Chop Feed	967 2165	Wabash	3.8	3.8	9.4	9.9	
Wakarusa Milling Co., Wakarusa, Ind. Wakarusa Corn and Oats Chop.....	1250 1849	Wakarusa	3.9	4.4	9.5	10.7	
Walton & Whisler, Atlanta, Ind. Chop Feed	111 2699	Atlanta	3.7	6.1	9.5	9.9	
Waterloo Mills, The, Waterloo, Ind. The Waterloo Mills Corn and Oats Chop.....	169 2315	Waterloo	3.9	4.3	9.5	10.8	
Way, C. B., LaPorte, Ind. Chopped Feed	2131 1784	LaPorte	3.5	4.1	9.5	8.8	
Wayman, Guy, Dunkirk, Ind. Wayman's Chop Feed.....	368 2545	Dunkirk	3.0	4.1	9.0	10.2	
Wellington & Son, Anderson, Ind. Wellington A. X. A. Corn and Oats Chop.....	76 2391	Anderson	3.5	5.2	10.0	10.0	
White Bros., LaPorte, Ind. Corn and Oats Chop.....	1294 1644	LaPorte	3.9	4.4	9.5	10.8	
Williamson & Co., J. H., Muncie, Ind. Corn and Oats Chop.....	1459 2610	Muncie	3.9	3.1	9.5	10.5	
Witt, Joseph W., Lebanon, Ind. Corn and Oats Chop.....	667 2228	Lebanon	3.9	5.3	9.5	10.1	
Zehner Milling Co., Plymouth, Ind. Corn and Oats Chop.....	1430 1967	Plymouth	3.9	4.5	9.5	9.7	
MISCELLANEOUS CHOP FEED							
CORN, OATS AND RYE							
Bluffton Milling Co., Bluffton, Ind. Corn, Oats and Rye Chop.....	669 2293	Bluffton	3.2	4.0	11.5	10.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Ellis Feed Mill, Hartford City, Ind. Ellis' Corn, Oats and Rye Chop.....	913	2638	Hartford City..	3.9	4.0	9.5	9.0	
Hermann, S. C., Muncie, Ind. "Hermann's Chop Feed".....	506	2806	Muncie	3.5	3.5	9.5	10.0	
Peoples' Flouring Mills, Ashley, Ind. Huber's Chop Feed.....	1218	2990	Ashley	3.9	3.8	9.5	10.7	
Plymouth Grain Co., The, Plymouth, Ind. Mixed Feed	1438	1909	Plymouth	4.0	4.0	9.5	9.2	
Slack, E. B., Muncie, Ind. Slack's Chop Feed.....	811	2606	Muncie	3.5	4.3	9.5	9.6	
Sweet, W. G., Royal Center, Ind. Sweet's Corn, Rye and Oat Chop.....	708	3017	Royal Center..	3.7	2.7	9.5	9.3	
Thomas, A. R., Markle, Ind. Corn, Oats and Rye Chop.....	2104	2244	Markle	3.2	3.9	9.5	9.8	
Tippecanoe Mills, Monticello, Ind. *Chop Feed	2214	2266	Monticello	3.0	4.6	9.5	10.7	
CORN, OATS, RYE AND BARLEY								
Buchela, Chas. J., Bluffton, Ind. Corn and Oats Rye and Barley Chop....	729	2226	Bluffton	2.5	4.1	9.5	10.0	
Hunsicker & Bender, Bluffton, Ind. Chop Feed	453	2220	Bluffton	2.0	3.5	8.0	10.0	
CORN, OATS, WHEAT, RYE AND BARLEY								
Bash & Co., S., Fort Wayne, Ind. Bash's Chop Feed.....	906	1916	Fort Wayne....	3.9	4.4	9.5	10.1	
CORN, OATS, WHEAT AND RYE PRODUCT								
Abbott Brothers, Elwood, Ind. Abbott's Chop Feed.....	109	2631	Elwood.....	3.8	4.2	9.4	8.8	
Reed & Co., T. L., Star City, Ind. T. L. Reed & Co. Feed.....	1964	3020	Star City.....	3.7	3.7	10.0	10.0	
CORN, OATS AND CORN BRAN								
Barrett Elevator Co., Greenfield, Ind. *Chop Feed	2347	2664	Greenfield	3.9	5.4	9.0	10.2	
Besser, W. F., Greencastle, Ind. Besser's Chop Feed.....	323	2177	Greencastle	4.1	4.9	10.3	10.3	
Fyke Milling Co., LaGrange, Ind. Fyke's Chop Feed.....	2134	1891	LaGrange	3.5	5.0	9.5	10.7	
Fyke's Chop Feed.....	2134	2979	LaGrange	3.5	4.7	9.5	9.9	
Garrett & Funk, Liberty Center, Ind. Corn and Oats Chop.....	1500	2200	Liberty Center..	3.9	4.7	9.5	9.7	
Guyatt, Wm., Knox, Ind. Guyatt Chop Oats and Corn.....	26	1577	Knox	3.9	3.3	9.5	10.9	
Guyatt Chop Oats and Corn.....	26	1992	Knox	3.9	3.4	9.5	11.8	Buckwheat hulls

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Harris Milling Co., Greencastle, Ind. Harris' Chop Feed	210	2174	Greencastle	4.1	5.0	10.3	9.7	.
Houck & Knox, Converse, Ind. *Chop Feed	2311	2524	Converse	3.2	3.5	9.0	9.2	
Jenkins & Cohee, Whitestown, Ind. *Chop Feed	2270	2337	Whitestown	3.6	5.1	9.5	10.8	
Niccum-Henley Co., Swayzee, Ind. Corn and Oats Chop	1526	2354	Swayzee	3.9	4.0	9.0	9.1	
Corn and Oats Chop	1526	3030	Swayzee	3.9	3.3	9.0	10.3	
Ogden, Geo. R., Milford, Ind. Corn and Oats Chop	1575	1850	Milford	3.8	4.7	9.0	10.7	
Oxford Feed Mill, Oxford, Ind. Deed's Chop Feed	249	2737	Oxford	3.9	4.3	9.5	9.0	
Pancost Milling Co., Elkhart, Ind. "Chop-Feed"	739	1824	Elkhart	3.0	4.3	8.0	11.0	
Rochester Roller Mills, Rochester, Ind. Corn and Oats Chop	1201	2059	Rochester	3.9	3.3	9.5	9.8	Buckwheat
Smock & Caca, Noblesville, Ind. Corn and Oats Chop	1423	2370	Noblesville	3.9	3.7	9.5	9.3	Corn cob
Corn and Oats Chop	1423	2734	Noblesville	3.9	4.4	9.5	9.7	2.1% corn cob
South Whitley Mills, South Whitley, Ind. *Chop Feed	2141	1983	South Whitley	3.9	4.0	9.0	10.7	
Steinhilber Milling Co., Hartford City, Ind. Steinhilber's Chop	1913	2541	Hartford City	3.9	4.0	9.5	9.5	3% corn cob
Studler Bros., Linn Grove, Ind. *Chop Feed	2452	2323	Linn Grove	3.9	4.4	8.2	10.1	
Sutton, E. S., Van Buren, Ind. Corn and Oats Chop	1949	2311	Van Buren	3.9	4.2	9.0	10.4	
Taylor Feed Mill, J. P., Jonesboro, Ind. *Chop Feed	2324	2539	Jonesboro	3.5	4.2	9.0	9.3	
Uhl & Co., Dennis, Logansport, Ind. Corn and Oats Chop	1220	2113	Logansport	4.0	4.3	9.0	11.3	
Ulrey & Co., A. A., Fairmount, Ind. Corn and Oats Chop	1549	2329	Fairmount	3.9	4.3	9.0	9.3	
Volland Milling Co., The, Ft. Wayne, Ind. Volland's Chop Feed	309	1903	Fort Wayne	3.9	4.1	8.0	10.0	
Wood & Co., P. O., Syracuse, Ind. Corn and Oats Chop	1503	2034	Syracuse	3.9	2.9	9.5	9.3	
CORN, OATS, WHEAT AND CORN BRAN								
Holdaway Co., W. L., Terre Haute, Ind. *Holdaway's Horse Feed	2120	2173	Terre Haute	3.9	3.6	9.0	9.3	
Leach & Co., E. R., Sullivan, Ind. Chop Feed	1155	2705	Sullivan	4.3	4.4	10.3	10.1	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Stewart, H., Terre Haute, Ind. "Stewart's Mixed Feed"-----	2193	2173	Terre Haute	4.0	4.1	10.0	14.9	
CORN MEAL, OATS AND CORN BRAN								
Jones & Long, Wabash, Ind. Corn and Oat Chop-----	481	2164	Wabash	3.9	4.3	9.5	9.5	
CORN, OATS AND WHEAT BRAN								
Allan, J. P., Farmersburg, Ind. Allan's Mixed Feed-----	1163	2703	Farmersburg	3.3	6.7	9.0	13.3	
Brown, George, Evansville, Ind. Brown's Horse Feed-----	749	1934	Evansville	3.9	4.5	12.0	11.9	
Fortville Milling Co., Fortville, Ind. Fortville Dairy Feed-----	1473	2330	Fortville	3.5	4.0	9.0	9.3	Cheat and corn cockle
Griffin and Dix, Terre Haute, Ind. Chop-----	393	2377	Terre Haute	3.9	4.1	9.0	9.1	
Lathrop & Rardin, Brazil, Ind. Mixed Feed-----	323	2302	Brazil	7.0	4.1	9.3	10.5	
Lawson & Co., John T. Spencer, Ind. Bran, Shorts, Oats and Cracked Corn-----	1236	2742	Jasonville	3.3	4.9	14.0	13.9	
Victor Milling Co., Terre Haute, Ind. Chop Feed-----	1023	2231	Terre Haute	3.3	6.0	11.0	11.6	
CORN AND WHEAT SCREENINGS								
Meyers & Bros., Milling Co., T. C., Epsom, Ind. Corn and Wheat Screenings-----	1847	2723	Epsom	3.5	3.7	10.3	9.3	
CORN, OATS AND WHEAT SCREENINGS								
Barnes & Co., R. J., Dunkirk, Ind. New Chop Feed-----	1761	2649	Dunkirk	3.5	3.1	9.5	9.4	
Coal City Milling Co., Coal City, Ind. Coal City Milling Co. Chop Feed-----	1571	2447	Clay City	3.0	3.3	12.0	10.3	
Jay Grain Co., The, St. Mary's Ohio. New Chop Feed-----	1730	2674	Redkey	3.5	3.0	9.5	9.9	
Kinsey Bros., Mentone, Ind. Corn and Oats Chop-----	1903	2614	Mentone	3.5	4.3	9.5	10.9	
Martin, J. C. F., North Manchester, Ind. Corn and Oats Chop-----	1330	2321	N. Manchester	3.9	6.1	9.5	10.3	
McFadden & Co., D. G., Ridgeville, Ind. Corn and Oats Chop-----	1305	1763	Ridgeville	3.9	3.5	9.5	10.9	
Westphalia Mill & Elevator Co., Westphalia, Ind. Mixt Feed-----	1299	2719	Westphalia	3.0	3.7	10.5	12.0	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
CORN, OATS, RYE AND WHEAT SCREENINGS								
*Amboy Milling Co., Amboy, Ind. Chop Feed -----	2314	2527	Amboy -----	3.0	3.3	10.0	9.3	
Goodrich Bros.' Hay & Grain Co., Winchester, Ind. Climax Chop -----	1453	1773	Winchester ----	4.5	3.4	11.0	10.6	
Parker City Mills, Parker City, Ind. *Star Mixed Feed -----	2970	2437	Parker City ----	3.5	3.6	9.0	9.6	
CORN, OATS, WHEAT, CORN BRAN AND WHEAT SCREENINGS								
Bridgeton Roller Mills, Bridgeton, Ind. Mixed Feed -----	1210	2753	Bridgeton -----	4.0	4.4	9.3	10.6	
CORN, SIFTINGS, OATS, RYE AND WHEAT SCREENINGS								
Murray, David R., Clinton, Ind. Mixed Feed -----	1084	1754	Clinton -----	3.5	3.5	11.0	12.3	
CORN, OATS, WHEAT, OAT HULLS, CORN BRAN AND WHEAT SCREENINGS								
Union Grain & Coal Co., The, Anderson, Ind. "Union" Mixed Feed -----	1646	2400	Anderson -----	3.0	3.9	10.0	10.1	
OATS AND RYE								
Simmons, J. L., Sheldler, Ind. **Rye and Oats Chop -----	2724		Sheldler -----		3.3		10.2	
WHEAT BRAN AND OATS								
Grimes Milling Co., The, Leavenworth, Ind. Grimes Milling Co.'s Mixed Feed -----	1335	1514	Leavenworth --	4.0	3.6	15.0	13.9	Corn cockle Screenings
Grimes Milling Co.'s Mixed Feed -----	1335	2933	Laconia -----	4.0	4.2	15.0	13.6	
CORN AND COB MEAL AND WHEAT PRODUCT								
Enterprise Feed Mill, Princeton, Ind. Mixed Feed -----	1942	2026	Princeton -----	3.0	3.9	11.0	13.2	
CORN AND COB MEAL AND WHEAT								
Forrest Park Mills, Terre Haute, B. B. No. 7, Ind. *Chop Feed -----	2229	2236	Terre Haute ----	3.5	4.2	9.5	9.9	
CORN AND COB MEAL, OATS AND WHEAT PRODUCT								
Walker & Co., Peter M., Loogootee, Ind. Mixed Feed -----	537	1703	Loogootee -----	3.7	3.9	13.5	11.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
CORN, OATS AND CORN SCREENINGS								
Canal Elevator Company, Peru, Ind. Chop Feed	886	2132	Peru	3.2	3.7	8.8	9.7	
CORN BRAN AND CORN SCREENINGS								
Morning Star Mill, Evansville, Ind. Corn Bran and Mill Run.....	2167	2350	Evansville	3.0	3.8	8.0	7.9	
GROUND FLAXSEED, OIL MEAL								
Mayflower Mills, Ft. Wayne, Ind. **Pure Ground Flaxseed.....	2639		Elwood		33.0		22.8	
LINSEED MEAL								
American Linseed Co., New York, N. Y. "Wright & Hills" Linseed Meal.....	819	1872	LaFayette	6.0	7.3	32.0	35.6	
"American Linseed Co.," Linseed Meal.....	820	1904	Ft. Wayne	6.0	6.3	32.0	32.2	
"Wright & Hills" Linseed Meal.....	819	2303	Thorntown	6.0	6.7	32.0	36.4	
"Wright & Hills" Linseed Meal.....	819	2454	Monticello	6.0	10.4	32.0	37.1	
"Wright & Hills" Linseed Meal.....	819	2836	Purdue Farm.....	6.0	6.6	32.0	36.3	
Archer-Daniels Linseed Co., Minneapolis, Minn. *Old Process Ground Linseed Cake.....	1834	1604	New Albany ..	6.0	6.9	32.0	34.5	
Old Process Ground Linseed Cake.....	1834	1728	Indianapolis ..	6.0	8.8	32.0	34.1	
Old Process Ground Linseed Cake.....	1834	3074	Greensburg	6.0	6.8	32.0	32.9	
Brown Oil Co., Robert B., St. Louis, Mo. *Pure Old Process Linseed Meal.....	2168	1986	Evansville	9.0	8.6	34.0	34.3	
Pure Old Process Linseed Meal.....	2168	2318	Mt. Vernon	9.0	9.2	34.0	33.0	
Chicago White Lead & Oil Co., The, Chicago, Ill. "The King" Ground Linseed Oil Cake....	572	1636	Michigan City..	6.0	9.0	32.0	32.6	
"The King" Ground Linseed Oil Cake....	572	1712	Bloomfield	6.0	9.4	32.0	34.8	
"The King" Ground Linseed Oil Cake....	572	1780	LaPorte	6.0	9.7	32.0	33.2	
Evans Linseed Oil Company, Indianapolis, Ind. Linseed Oil Meal.....	773	2229	Thorntown	6.0	7.3	32.0	33.4	
Hills-Benedict Linseed Oil Co. **Oil Cake	2835		Purdue Farm ..		6.9		37.2	
Hirst & Begley Linseed Co., Chicago, Ill. Hirst & Begley Linseed Co.'s Ground Linseed Cake	823	1769	Winchester	8.0	6.8	32.0	36.7	
*Hirst & Begley Linseed Co.'s Ground Linseed Cake	2418	2794	Morocco	8.0	8.4	34.0	35.1	
Hirst & Begley Linseed Co.'s Ground Linseed Cake	2418	2362	Crown Point....	8.0	8.5	34.0	33.6	
Kell, C. H., Indianapolis, Ind. Flax Seed Meal.....	1795	2140	Indianapolis....	6.0	8.3	32.0	35.0	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Oil Meal.....	448	1898	Fort Wayne ..	8.0	8.8	30.0	29.5	
Mayflower Mills Oil Meal.....	448	2688	Flora	8.0	8.0	30.0	34.9	
Metzger Seed & Oil Co., The, Toledo, Ohio. Oil Meal	1367	2477	Medora	5.0	5.5	30.0	33.5	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Official Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Midland Linseed Company, Minneapolis, Minn.							
Old Process Ground Linseed Cake.....	663 1710	Orland	6.0	6.9	32.0	34.4	
Old Process Ground Linseed Cake.....	663 2109	Logansport ---	6.0	9.8	32.0	35.7	
McCaffrey & Co., Kokomo, Ind.							
Ground Oil Cake	1533 2506	Kokomo	5.0	7.3	32.0	35.8	
McCormick & Richardson, Logansport, Ind.							
Linseed Meal	1229 2111	Logansport ---	5.0	6.9	31.0	34.7	
O'Brien Varnish Company, The, South Bend, Ind.							
Screw Press Old Process Linseed Oil Meal	118 2583	Elkhart	8.8	7.2	35.1	35.8	
Sherwin-Williams Co., The, Cleveland, Ohio.							
SWC Linseed Meal	1723 2430	Cottage Grove ..	6.0	9.0	33.0	35.7	
SWC Linseed Meal	1723 2964	Friendship ---	6.0	9.6	33.0	34.2	
Valparaiso Grain & Elevator Co., Valparaiso, Ind.							
Ground Oil Cake	1404 1654	Valparaiso ---	5.0	7.8	30.0	33.8	
GROUND FLAXSEED CAKE, SECOND GRADE MEAL							
Laxo-Cake-Meal Co., The, Chicago, Ill.							
Laxo-Cake-Meal	2148 2373	Evansville.....	8.0	8.9	25.0	26.7	
Laxo-Cake-Meal	2148 2534	McGrawsville....	8.0	8.4	25.0	26.5	
Laxo-Cake-Meal	2148 2860	Winnamac.....	8.0	8.9	25.0	25.7	
COTTON SEED MEAL							
American Cotton Oil Company, The, New York, N. Y.							
Choice Cotton Seed Meal.....	1335 2483	Borden	9.0	8.9	41.0	41.0	
Choice Cotton Seed Meal.....	1335 2833	Near Attica ---	9.0	9.4	41.0	41.1	
Bridges Co., H. E., Memphis, Tenn.							
**Cotton Seed Meal.....	2206	Scipio	7.5			39.0	
Brodie & Co., F. W., Memphis, Tenn.							
Owl Brand Cotton Seed Meal.....	1769 1869	Martinsburg ---	7.0	8.2	41.0	39.0	
Owl Brand Cotton Seed Meal.....	1769 2093	Bloomington ---	7.0	9.9	41.0	41.4	
Owl Brand Cotton Seed Meal.....	1769 2381	Brookston	7.0	8.3	41.0	41.5	
Owl Brand Cotton Seed Meal (Cake Form)	1769 2833	Brookston	7.0	9.4	41.0	42.0	
†Owl Brand Cotton Seed Meal.....	1769 2408	Lebanon.....	7.0	9.2	41.0	38.8	
Brown Oil Co., Robert B., St. Louis, Mo.							
*Choice Cotton Seed Meal.....	2161 1945	Middlebury ---	9.0	9.5	41.0	40.1	
Curry Co., W. C., Louisville, Ky.							
Curry's Choice Cotton Seed Meal.....	2162 2273	Camden	8.5	9.9	41.0	41.7	
"Curry's Choice Cotton Seed Meal"	1800 2343	Evansville	8.5	12.0	42.0	39.5	
Curry's Choice Cotton Seed Meal.....	2162 2434	Yorktown	8.5	8.9	41.0	42.5	
Curry's Choice Cotton Seed Meal.....	2162 2767	Farmland	8.5	12.0	41.0	41.0	
Curry's Choice Cotton Seed Meal.....	2162 2798	Bloomington....	8.5	11.9	41.0	39.4	

*—Before registration

**—Not registered

†—Not tagged

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
DeSoto Oil Co., Memphis, Tenn. "DeSoto" -----	1520	2493	Salem -----	8.0	10.4	38.5	40.1	
Hermann & Co., J. G., Indianapolis, Ind. Hermann's Choice Cotton Seed Meal -----	2088	1723	Indianapolis --	7.0	10.9	41.0	39.8	
Hermann's Choice Cotton Seed Meal -----	2088	2121	Monrovia -----	7.0	8.1	41.0	42.6	
Hermann's Choice Cotton Seed Meal -----	2088	2078	Purdue Farm --	7.0	9.9	41.0	38.7	
Humphreys, Godwin & Company, Memphis, Tenn. *Dixie Brand Cotton Seed Meal -----	1487	1838	Purdue -----	8.0	10.3	41.0	39.4	
Dixie Brand Cotton Seed Meal -----	1487	1873	Lafayette -----	8.0	8.4	41.0	42.6	
Dixie Brand Cotton Seed Meal -----	1487	2135	Indianapolis --	8.0	10.5	41.0	41.1	
†Dixie Brand Cotton Seed Meal -----	1487	2507	Medora -----	8.0	9.2	41.0	39.8	
†Dixie Brand Cotton Seed Meal (Cake Form) -----	1487	2521	Medora -----	8.0	9.0	41.0	39.1	
Hunter Bros.' Milling Co., The, St. Louis, Mo. †Hunter Bros. Milling Co.'s Prime Cotton Seed Meal -----	2063	2475	Paoli R. R. 1. --	7.5	9.5	41.0	40.8	
Hunter Bros. Milling Co.'s Prime Cotton Seed Meal -----	2063	2864	New Castle ---	7.5	6.9	41.0	39.8	
Hunter Bros. Milling Co.'s Prime Cotton Seed Meal -----	2063	2875	Fowler -----	7.5	8.9	41.0	43.0	
Hunter Bros. Milling Co.'s Prime Cotton Seed Meal -----	2063	2896	Osgood -----	7.5	7.3	41.0	40.2	
Mississippi Cotton Oil Co., Yazoo City, Miss. **High Grade Cotton Seed Meal -----	2832		Chrisney -----	9.1			39.0	
Peacock Cotton Seed Meal Co., Memphis, Tenn. Peacock Cottonseed Meal -----	2191	2245	Bloomington --	8.0	9.6	38.5	37.9	
Roberts Cotton Oil Co., Memphis, Tenn. *Cotton Seed Meal -----	2554	2929	Washington ---	7.0	8.3	40.0	38.9	
Wells & Co., J. Lindsay, Memphis, Tenn. *Cotton Seed Meal -----	2822		Attica -----	5.5		21.9		53.3% cotton seed hulls
PRESSED WHOLE COTTON SEED INCLUDING HULLS								
Smith & Co., Geo. B., Chicago, Ill. Cold Pressed Cotton Seed -----	2515	2842	Wheatfield ---	6.0	6.4	25.2	25.4	
COTTON SEED MEAL AND COTTON SEED HULLS (Cotton Seed Feed Meal)								
Bartlett & Co., J. E., Jackson, Mich. "Cuddomeal" -----	2232	2571	LaGrange -----	5.0	4.2	15.0	14.0	
"Cuddomeal" -----	2232	2623	Nappanee -----	5.0	4.8	15.0	15.4	
Tennessee Fiber Co., Memphis, Tenn. Creamo Brand Cotton Seed Feed Meal -----	1378	1727	Indianapolis --	5.0	6.5	22.0	21.9	
†Creamo Brand Cotton Seed Feed Meal -----	1378	2573	Farmland -----	5.0	4.7	22.0	19.7	
Creamo Brand Cotton Seed Feed Meal -----	1378	2587	Muncie -----	5.0	5.4	22.0	22.1	
†Creamo Brand Cotton Seed Feed Meal -----	1378	2720	Milton -----	5.0	5.8	22.0	22.1	
Creamo Brand Cotton Seed Feed Meal -----	1378	2863	Redkey -----	5.0	5.4	22.0	20.3	

*—Before registration

**—Not registered

†—Not tagged

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
COTTON SEED HULLS								
Humphrey, Godwin Co., Memphis, Tenn. Cotton Seed Hulls		2510	Salem		2.5		2.8	
MALT SPROUTS								
Smith, Roper & Co., Hobart, Ind. Malt Sprouts	3041	1893	Ainsworth	1.0	2.0	18.0	22.9	
ALFALFA PRODUCTS								
Dickinson Company, The, Albert, Chicago, Ill. Alfalfa Meal	3091	1813	South Bend	2.0	2.0	13.0	17.3	
Peters Mill Co., M. C., Omaha, Neb. "Lucerne" Alfalfa Meal	1680	2101	Martinsville	2.0	1.7	13.0	13.1	
"Lucerne" Alfalfa Meal	1680	2341	Lafayette	2.0	2.8	13.0	15.3	
Ralston Purina Co., St. Louis, Mo. Purina Alfalfa Meal	265	2740	Indianapolis	2.0	2.2	16.0	16.2	
Weiss Alfalfa Stock Food Co., Otto, Wichita, Kan. Pure Dustless Alfalfa	2038	1749	Indianapolis	1.5	1.9	14.0	14.4	
PROPRIETARY & MOLASSES FEEDS								
								Guaranteed Ingredients
Alfalfa Products Co., The, Fremont, Neb. Alfalfa-Lass	2132	2094	Bloomington	1.0	0.5	13.0	13.8	Alfalfa and molasses
American Milling Company, Chicago, Ill. Sucrene Dairy Feed	2035	2135	Terre Haute	2.5	4.4	16.5	17.8	Corn, oats, cotton-seed meal, brewers grains, grain screenings and molasses
American Milling Company, Philadelphia, Pa. Sucrene Dairy Feed	908	1864	Martinsburg	2.5	4.5	16.5	18.8	Same as 2135
Sucrene Dairy Feed	908	2110	Logansport	2.5	2.5	16.5	18.3	Same as 2135
Sucrene Horse and Mule Feed	1947	1870	Martinsburg	2.0	2.0	16.0	12.3	Corn, oats, brewers grains, grain screenings and molasses
Barwell, J. W., Waukegan, Ill. Blatchford's Calf Meal	1047	2693	South Bend	5.0	4.3	25.0	27.4	Locust bean meal, flour, flaxseed, seeds, lentils
Blatchford's Calf Meal	1047	2947	Crown Point	5.0	5.2	25.0	27.8	Same as 2693
Biehl, I. L., Brazil, Ind. Biehl's Mixed Feed	1153	2208	Brasil	4.2	5.7	10.5	12.2	Wheat, corn, oats, barley, wheat bran, hominy feed, cotton seed meal, grain screenings, salt and molasses
Biehl's Mixed Feed	1153	2911	Brasil	4.9	4.9	10.5	11.1	Same as 2208

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Champion Milling Co., Lyons, Ia. *Champion Molasses Feed Compound-----	2448	2405	Mulberry -----	9.0	1.8	18.0	9.2	Guaranteed Ingredients Wheat bran, corn, flaxseed, wheat screenings, peat and molasses
Chapin & Company, Inc., Milwaukee, Wis. *Unicorn Dairy Ration-----	2128	1708	Orland -----	6.0	6.4	26.0	28.0	Wheat and corn gluten feed, hominy meal, barley feed and sprouts, distillers grains and cotton seed meal
Continental Cereal Co., Peoria, Ill. *Continental Gluten Feed-----	2204	1871	Martinsburg --	12.5	11.7	31.0	28.8	Corn, oats and malt.
Corn Products Refining Company, Chicago, Ill. Diamond Hog Meal-----	2249	2760	Crown Point---	8.0	9.2	18.0	18.8	Gluten feed and sterilized animal bone
Edwards & Loomis Co., Chicago, Ill. Edwards Excelsior Crushed Grain Horse Feed-----	1422	2278	Terre Haute --	4.4	3.6	11.2	10.6	Corn, oats and barley
Edwards Excelsior Crushed Grain Horse Feed-----	1422	2020	Muncie -----	4.4	4.0	11.2	9.3	Same as 2278
Great Western Cereal Co., The, Chicago, Ill. *Maizealfalfa Feed-----	1897	1539	Gary -----	4.0	3.5	12.0	10.8	Corn, hominy feed, oat middlings and alfalfa meal
Maizealfalfa Feed-----	1897	1729	Indianapolis --	4.0	3.9	12.0	11.8	Same as 1539
Maizealfalfa Feed-----	1897	2138	Indianapolis --	4.0	3.6	12.0	11.4	Same as 1539
Daisy Horse Feed-----	1963	1731	Indianapolis --	3.5	1.8	12.0	14.2	Corn, oats, cottonseed meal, alfalfa meal, oat middlings, oat hulls and molasses. Remarks, contains corn cockle and other seeds
Daisy Horse Feed-----	1963	2129	Indianapolis --	3.5	1.7	12.0	13.8	Corn, oats, cotton seed meal, alfalfa meal, oat middlings, oat hulls and molasses
Daisy Horse Feed-----	2039	2153	Indianapolis --	4.0	1.6	12.0	14.5	Cottonseed meal, barley, alfalfa meal, oats, oat middlings, oat hulls and molasses
Habig Brothers, Indianapolis, Ind. Habig's Mixed Feed-----	1975	2150	Indianapolis --	5.0	5.1	9.0	12.6	Wheat bran, corn bran, hominy feed, kaffir meal, feed meal and linseed meal

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Hayes, W. E., Kokomo, Ind. W. E. Hayes Chop Feed.....	1531	2497	Kokomo -----	3.7	4.9	10.5	17.4	Guaranteed Ingredients Corn, oats, wheat, barley, wheat bran, cottonseed meal, grain screen- ings, salt and molasses
H. O. Company, The, Buffalo, N. Y. H. O. Horse Feed.....	1233	1730	Indianapolis --	4.5	4.7	12.0	13.0	Corn, oats, oat bran, oat hulls, wheat middlings, red dog flour, gluten feed, hom- iny feed and salt
Indiana Milling Co., Terre Haute, Ind. Jersey Mixed Feed	713	3198	Brazil -----	2.0	2.9	10.0	11.3	Wheat product and cob meal Remarks, Screenings
Jersey Mixed Feed	713	2212	Brazil -----	2.0	2.9	10.0	11.7	Same as 2198
Jersey Mixed Feed	713	2276	Terre Haute --	2.0	3.1	10.0	11.7	Same as 3198
Jersey Middlings	2073	2230	Terre Haute --	2.0	3.1	10.0	13.4	Wheat product and cob meal
Whiskerene	2127	2237	Terre Haute --	2.0	1.8	11.4	3.0	Corn silks, husks and corn screen- ings
Whiskerene	2127	2763	Terre Haute --	2.0	2.0	11.4	11.5	Same as 2127
Sterling Mixed Feed.....	2379	2766	Terre Haute --	3.0	3.1	11.5	12.3	Wheat product, low grade flour and cob meal
International Sugar Feed Co., Minneapolis, Minn. Sugared Feed For Horses.....	2073	2143	Bloomington --	5.0	4.4	12.5	16.1	Oats, barley, lin- seed meal and mo- lasses
Janes, Frank E., Indianapolis, Ind. Al-Mo	2032	1746	Indianapolis --	1.0	0.6	11.0	12.4	Alfalfa meal and molasses
Al-mo-Co.	2033	1747	Indianapolis --	3.0	2.5	12.0	10.3	Alfalfa meal, corn, oats and molasses
Janes' Alfalfa Horse Feed.....	2035	1752	Indianapolis --	4.0	2.6	12.7	12.6	Alfalfa, corn and oats
North-West Mills Co., Winona, Minn. Sugarota Dairy and Stock Feed.....	1806	2015	Nappanee -----	3.5	5.0	13.0	17.4	Flax bran, cotton seed meal, brew- ers grains, hom- iny feed, linseed meal, malt sprouts, gluten feed, grain screen- ings & molasses
Sugarota Dairy and Stock Feed	1806	3403	Fortville -----	3.5	5.6	12.6	15.1	Same as 2015
"Sugarota" Horse Feed.....	2207	3333	Fortville -----	3.5	6.0	13.0	16.1	Linseed meal, flax bran, malt sprouts, cottonseed meal, wheat bran, shorts, middlings, red dog flour, hom- iny feed, oat clippings and mo- lasses Remarks Wild buckwheat and other weed seeds present

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
								Guaranteed Ingredients
"Sugarota" Horse Feed.....	2200	2404	Fortville	3.5	6.3	12.0	14.9	As guaranteed in 2333
"Sugarota" Horse Feed.....	2200	2327	Attica	3.5	5.7	12.0	15.5	Same as 2404
"Sugarota" Horse Feed.....	2200	2370	Salem	3.5	4.7	12.0	12.5	Same as 2404
"Sugarota" Horse Feed.....	2200	2319	Vernon	3.5	6.4	12.0	12.6	Same as 2404
Sugarota Dairy Feed.....	2198	2325	Attica	4.5	5.9	18.0	17.0	Cottonseed meal, flax bran, hominy feed, wheat bran, shorts, middlings, red dog flour, oat clippings and molasses
Sugarota Dairy Feed.....	2198	2309	Salem	4.5	5.6	18.0	15.5	Same as 2325
"Sugarota" Swine Feed.....	2199	2326	Attica	4.5	6.1	18.0	17.0	Same as 2325
"Sugarota" Calf Feed.....	2197	2333	North Vernon.....	6.0	6.2	25.0	26.6	Wheat, malt, linseed meal and cottonseed meal
Peters Mill Co., M. C., Omaha, Neb.								
Alfal-fat Sugar Meal.....	1449	1734	Indianapolis ..	2.5	0.9	11.0	12.8	Alfalfa and molasses
Alfal-fat Sugar Meal.....	1449	2183	Terre Haute ..	2.5	0.5	11.0	13.7	Same as 1734
Alfal-fat Sugar Meal.....	1449	2440	LaFayette	2.5	0.7	11.0	12.6	Same as 1734
Alfal-fat Sugar Meal.....	1449	2520	Bedford	2.5	0.5	11.0	13.1	Same as 1734
"Arab" Horse Feed.....	1852	1725	Indianapolis ..	3.0	3.1	11.5	11.0	Corn, oats, alfalfa meal and molasses
June Pasture Dairy Meal.....	1873	1726	Indianapolis ..	2.0	1.1	13.0	12.4	Alfalfa and molasses
June Pasture Dairy Meal.....	1873	1985	Evansville	2.0	0.5	13.0	12.4	Same as 1726
June Pasture Dairy Meal.....	1873	2170	Martinville	2.0	0.8	13.0	13.8	Same as 1726
June Pasture Dairy Meal.....	1873	2594	South Bend.....	2.0	0.8	13.0	11.1	Same as 1726
†Acorn Sugar Feed.....	2273	2255	Indianapolis ..	2.0	3.6	10.0	10.7	Corn, barley, alfalfa meal and molasses
								Remarks
Peters' June Pasture Dairy Meal.....	2272	2080	Crawfordsville..	1.0	1.3	12.0	11.8	Oats and wheat Same as 1726.
Quaker Oats Company, The, Chicago, Ill.								
Victor Feed	688	1549	Indiana Harbor	3.0	3.2	7.5	8.6	Corn, oat middlings, oat shorts oat hulls
Victor Feed	688	1581	Crothersville ..	3.0	3.0	7.5	8.1	Same as 1549
Victor Feed	688	2145	Indianapolis ..	3.0	3.3	7.5	8.8	Same as 1549
Victor Feed	688	2330	Marion	3.0	2.9	7.5	7.8	Same as 1549
Schumacher Stock Feed.....	687	1823	Elkhart	4.0	3.6	10.0	11.9	Corn, barley, wheat flour, oat middlings, oat shorts and oat hulls
Schumacher Stock Feed.....	687	2144	Indianapolis ..	4.0	3.1	10.0	10.9	Same as 1823
Schumacher Stock Feed.....	687	2329	Marion	4.0	3.0	10.0	11.6	Same as 1823
Schumacher Stock Feed.....	687	3072	Greensburg	4.0	3.2	10.0	10.6	Same as 1823
Belman & Lease, Terre Haute, Ind.								
Dairy Feed	2224	2445	Terre Haute ..	2.0	1.7	10.0	11.9	Corn screenings, malt, chaff

*—Before registration

**—Not registered

†—Not tagged

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Guaranteed Ingredients								
Stout, Harry T., Crawfordsville, Ind. Star Chop Feed.....	2158	2155	Indianapolis ..	4.0	4.0	11.0	11.1	Wheat bran, shorts, corn, oats, alfalfa
Sugarine Company, The, Chicago, Ill. Sugarine Dairy Feed.....	2071	2235	Zionsville	3.5	4.5	16.5	17.8	Cottonseed meal, oats, barley, wheat, grain screenings and molasses
United Cereal Company, Chicago, Ill. C. & O. Feed.....	2069	1812	South Bend....	4.4	4.5	8.0	8.1	Corn, hominy feed, oat middlings, oat shorts, oat hulls
C. & O. Feed.....	2069	2355	Marion	4.4	3.7	8.0	8.4	Same as 1812
C. & O. Feed.....	2069	2622	Muncie	4.4	4.4	8.0	8.1	Same as 1812
Famous Feed	2069	2621	Muncie	4.0	4.0	8.0	7.8	Same as 1812
Weiss Alfalfa Stock Food Co., The, Otto, Wichita, Kan. Otto Weiss Alfalfa Stock Food.....	1213	1748	Indianapolis ..	4.8	2.9	13.2	13.2	Alfalfa, corn chop, wheat bran, shorts, linseed meal
Otto Weiss Alfalfa Stock Food.....	1213	2309	Indianapolis ..	4.8	3.2	13.2	11.8	Same as 1748
Otto Weiss Alfalfa Stock Food.....	1213	2396	Anderson	4.8	3.2	13.2	13.0	Same as 1748
Western Grain Products Co., West Hammond, Ill. Hammond Dairy Feed.....	555	1584	North Vernon..	3.0	4.0	17.0	16.2	Distillers grains, cottonseed meal, malt sprouts, grain screenings and molasses
Hammond Dairy Feed.....	555	1598	Crown Point....	3.0	3.7	17.0	16.5	Same as 1584
Hammond Horse Feed.....	2011	1598	North Vernon..	4.0	2.9	11.0	14.7	Corn, barley, oats, oat shorts, oat middlings, oat hulls, malt sprouts and molasses
Hammond Horse Feed.....	2011	2494	Salem	4.0	2.6	11.0	13.2	Same as 1598
POULTRY AND SCRATCH FEEDS								
Remarks,								
Banta-Bender Mfg. Co., Ligonier, Ind. Banta Chick Feed.....	1873	1843	Ligonier	3.0	3.1	16.0	14.3	
Bash & Co., S., Fort Wayne, Ind. Bash's Chicken Feed.....	904	1915	Fort Wayne ..	3.9	3.0	9.5	10.9	
Bauermeister Company, Chas. W., Terre Haute, Ind. Bauermeister's Star Feed.....	1154	2239	Terre Haute ..	3.9	2.8	12.0	9.3	
Beckman Supply Co., The, Hammond, Ind. The Ideal Poultry Food.....	1245	2806	Hammond	2.0	5.1	5.0	10.9	Weed seeds
Bleker Bros., Hammond, Ind. Chicken Feed	1341	1590	Hammond	2.0	3.5	5.0	11.1	
Chicken Feed	1341	2803	Hammond	2.0	3.3	5.0	10.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Browning Milling Co., W. A., Evansville, Ind. Browning's Mixed Chicken Feed.....	2164	2374	Evansville	9.0	8.0	8.0	9.9	
Byrnes & Co., W. J., Chicago, Ill. ***Daisy Brand Chick Food.....	1172	2855	Rolling Prairie	9.0		10.8		Principal ingredients identified, cracked corn, milo maize, mica
Chamberlain, W. F., St. Louis, Mo. Chamberlain's Perfect Chick Feed.....		2915	Rexville	1.9	3.1	10.0	10.5	
City Milling Co., Quincy, Ill. **H. P. Egg Scratch without Beef Scraps	6	1664	Rushville		8.1		10.0	Principal ingredients identified, wheat, corn, kaffir corn, barley and buckwheat
Corno Mills Company, The, East St. Louis, Ill. Corno Hen Feed.....	1804	2150	Indianapolis	8.7	3.4	10.0	11.1	
DeWine Company, The John, Yellow Springs, O. DeWine's Developing Feed.....	1969	2496	Kokomo	3.7	4.3	10.2	10.1	Weed seeds
DeWine's Laying Feed.....	1970	2661	Elkhart	9.6	8.3	10.3	9.8	
Dickinson Co., The Albert, Chicago, Ill. "Colonial" Developing Feed.....	1985	1745	Indianapolis	3.0	2.5	10.5	10.5	
"King" Pigeon Feed.....	831	1823	Elkhart	3.5	3.2	10.0	11.8	
"Globe" Scratch Feed.....	336	2275	Terre Haute	3.5	3.0	10.0	10.6	
"Pine Tree" Scratch Feed.....	327	2302	Thorntown	9.5	2.5	10.0	10.4	
Globe Scratch Feed, No Grit.....	1123	2593	South Bend	9.5	3.7	10.0	10.8	
"Globe" Scratch Feed, No Grit.....	2285	2001	South Bend	9.5	3.3	10.0	10.4	Millet seed
"Crescent" Chick Feed.....	328	2642	Jamestown	2.5	2.8	10.0	9.7	
"Sun" Chick Starter.....	329	2643	Jamestown	2.5	2.9	10.0	10.0	
"Globe" Scratch Feed.....	2286	2351	Crown Point	2.5	3.2	10.0	10.6	
"Crescent" Chick Feed.....	2287	3077	Greensburg	3.5	2.4	10.0	8.1	
Edwards & Loomis Co., Chicago, Ill. "A" Red Comb Fine Chick Feed.....	1800	1583	Seymour	3.4	2.1	11.0	9.7	
A Red Comb Poultry Feed.....	1904	1583	Seymour	3.3	3.1	10.8	10.1	
A Red Comb Poultry Feed.....	1904	2496	Kokomo	3.3	3.2	10.8	10.1	
A Red Comb Poultry Feed.....	1904	2950	Crown Point	3.3	3.2	10.8	9.7	
Goeke Co., The, Edw. F., Evansville, Ind. Four X Scratch Feed.....	1930	1965	Evansville	3.0	3.3	8.0	10.1	
Habig Brothers, Indianapolis, Ind. "Habig Brother's Chick Food".....	1769	2158	Indianapolis	3.0	5.3	10.0	8.7	
Illinois Feed Mills, St. Louis, Mo. Feed-Well Mill Feed—Chick and Hen Size	567	3054	Connersville	3.0	3.0	9.0	10.6	
Illinois Seed Company, The, Chicago, Ill. Phoenix Brand Poultry Feed.....	184	2274	Terre Haute	3.0	3.9	10.5	11.0	
Monitor Brand, Chick Feed.....	181	2801	Hammond	3.0	2.8	10.5	10.4	
Phoenix Brand Poultry Feed.....	184	2946	Crown Point	3.0	3.5	10.5	10.3	
Indiana Seed Co., The, Indianapolis, Ind. Monument Brand Poultry Food.....	1844	1751	Indianapolis	3.0	3.0	7.0	11.0	Corn cockle
Monument Brand Hen Food.....	983	2134	Indianapolis	3.3	3.1	6.2	10.4	
Monument Brand Chick Feed.....	2245	2723	Muncie	3.0	3.8	10.5	12.2	
Monument Brand Poultry Food.....	2122	2735	Indianapolis	3.0	3.3	10.5	10.8	Barley, flaxseed

*—Before registration
 **—Not registered
 ***—Branded on sacks

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Maines & Hamilton, Rensselaer, Ind. Crown Brand Poultry Food.....	1985 3009	Rensselaer	3.9	3.1	9.0	11.4	
Midland Poultry Food Co., Kansas City, Mo. Midland Poultry Food No. 4.....	2133 2154	Indianapolis	3.8	3.2	17.7	17.8	
McCormick & Richardson, Logansport, Ind. Jay Brand Poultry Food.....	370 2106	Logansport	3.0	3.2	14.2	10.8	
McCullough, J. Chas., Cincinnati, Ohio. Acme Chick	2048 2884	North Vernon	3.0	2.5	11.0	8.4	25% rice.
Acme Chick	2048 3075	Greensburg	3.0	3.3	11.0	8.0	
McCullough, J. M., Cincinnati, Ohio. **Screenings (Mix Grain and Seeds).....	3045	Laurel	1.2		8.8		Principal ingredients identified, wheat, corn, oats, kaffir corn, milo maize, millet, shells, grit and sweepings
North-West Mills Co., Winona, Minn. **Chick Feed	2339	Fortville	3.4		11.7		Excessive amount corn cockle.
*Sugarota Chicken Feed.....	2320 2381	North Vernon	3.5	2.5	12.0	11.7	16.8% corn cockle, 3.9% cow cockle and bindweed
Ohio Valley Seed Co., Evansville, Ind. Bell Brand Poultry Feed.....	1185 1980	Evansville	3.9	4.5	11.2	10.6	
O. K. Seed Store, Indianapolis, Ind. *O. K. Scratch Feed	2368 2652	Indianapolis	2.7	2.5	10.0	11.4	
Owens Flour, Feed and Seeds, E. G., Washington, Ind. Owens Scratch Feed.....	1893 2027	Washington	2.5	3.2	9.0	9.4	
Perry Feed Mill, H. D., Hartford City, Ind. Perry's Scratch Feed.....	1914 2639	Hartford City	2.5	2.8	10.0	8.3	
Quaker Oats Company, The, Chicago, Ill. Schumacher Scratching Grains.....	1763 2149	Indianapolis	3.0	2.9	10.5	10.6	
Prize Winning Little Chick Feed.....	2330 2761	Arcadia	3.5	3.1	10.5	10.4	
Prize Winning Hen Feed.....	2326 2762	Arcadia	3.0	3.4	10.5	10.3	
Red Hen Scratching Grains.....	2218 2764	Terre Haute	3.0	2.9	10.5	9.5	Corn cockle
Schumacher Little Chick Feed.....	2331 2765	Terre Haute	3.5	3.0	10.5	9.3	
Ralston-Purina Company, St. Louis, Mo. Protens Feed	1919 1614	Jeffersonville	4.0	3.7	12.8	15.3	
Purina Mash	966 2732	Indianapolis	5.0	2.9	17.0	17.4	
Robinson-Danforth Company, St. Louis, Mo. Mill Feed (Chick and Scratch Size).....	2490 3044	Laurel	3.5	4.2	10.0	9.7	Millet, flaxseed, weed seeds
Small & Co., W. H., Inc., Evansville, Ind. "Eclipse" Poultry Feed.....	1964 2349	Evansville	5.0	4.1	9.4	9.9	
Southern Seed Company, Louisville, Ky. Atlas Brand Hen Feed.....	1922 2151	Indianapolis	2.7	2.8	11.0	9.6	
Atlas Brand Chick Feed.....	1923 2152	Indianapolis	2.7	2.9	11.0	10.6	

*—Before registration

**—Not registered

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
United Cereal Company, Chicago, Ill.								
Gold Medal Chick Feed.....	2283	2856	Nappanee	9.5	2.7	9.5	8.9	
Gold Medal Poultry Food.....	2283	3076	Greensburg	2.0	2.3	9.0	9.0	
ANIMAL MEALS								
Armour Fertilizer Works, The, Chicago, Ill.								
Feeding Tankage	899	1670	Julietta	10.0	12.3	40.0	44.4	
Granulated Poultry Bone.....	901	1805	South Bend	0.5	2.0	25.0	25.1	
Feeding Tankage	899	2645	Jamestown	10.0	12.0	40.0	43.0	
Meat and Bone	897	2741	Indianapolis	8.0	10.4	42.0	45.6	
Feeding Tankage	899	2798	Fairmount	10.0	13.9	40.0	39.2	
Darling & Company, Chicago, Ill.								
Digester Tankage	1269	1616	Cottage Grove.....	10.0	5.9	60.0	62.9	
Digester Tankage	1269	3005	Bath	10.0	4.6	60.0	63.8	
Beef Scraps	751	1723	Indianapolis	10.0	10.2	55.0	64.5	
Special Digester Tankage.....	1271	2868	Salem	10.0	10.6	30.0	39.8	
Major Bros. Packing Co., Mishawaka, Ind.								
Blood Meal	1971	1811	Mishawaka	1.0	0.6	55.0	59.0	
Blood Meal	1971	2898	Mishawaka	1.0	0.4	55.0	65.8	
Rauh & Sons, E., Indianapolis, Ind.								
Rauh's Poultry Food	535	2736	Indianapolis	10.0	10.2	65.0	62.8	
Rauh's Digester Tankage for Hogs.....	2097	2828	Purdue Farm.....	---	7.7	60.0	61.6	
Rauh's Digester Tankage for Hogs.....	2097	2974	Purdue Farm.....	---	4.8	60.0	60.2	
Rauh's Stock Food	584	2932	Madison	12.0	11.2	80.0	76.2	
Southern Seed Company, Louisville, Ky.								
Beef Meal	2176	2166	Indianapolis	8.0	7.0	45.0	37.8	
Swift & Company, Chicago, Ill.								
Swift's Ideal Poultry Food.....	57	1802	South Bend	6.0	10.2	50.0	51.9	
Swift's Beef Scraps	59	2102	Logansport	12.0	17.8	55.0	59.6	
Swift's Digester Tankage	60	2301	Thorntown	8.0	11.3	60.0	60.7	
CONDIMENTAL STOCK FOODS, REGISTERED								Principal ingredients identified under microscope
Griffin Co., The W. M., Ft. Wayne, Ind.								
*Griffin Stock Mixture'	2137	1906	Ft. Wayne	3.0	3.0	16.0	15.8	Gentian, ginger, sulphur, salt, fenugreek, linseed meal
*Griffin Condition Powder.....	2139	1907	Ft. Wayne	4.4	5.7	20.0	25.5	Gentian, ginger, fenugreek, salt-peter, linseed meal
Hinshaw & Hughes, Elwood, Ind.								
H. & H. Stock and Poultry Food.....	512	2634	Elwood	4.0	13.7	26.0	16.8	Fenugreek, salt, salt-peter, Glauber's salt, flax-seed meal
Ragon Stock Food Co., D. S., Evansville, Ind.								
Farmers Stock Food.....	261	1962	Evansville	4.8	4.5	13.5	14.3	Gentian, ginger, sassafras, charcoal, salt, wheat product

*—Before registration

**—Not registered

*2.7% sulphur removed from ether extract.

TABLE VII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Standard Stock Food Company, Omaha, Neb. Standard Milk Meal.....	1004	2987	Westport	5.0	4.8	30.0	27.0	Principal ingredients identified under microscope Gentian, animal salt, fenugreek, blood meal, linseed meal
CONDIMENTAL STOCK FOODS, NOT REGISTERED								
Pratt Food Co., Philadelphia, Pa. Pratt's Animal Regular.....	2084	1904	W. LaFayette	8.7		12.4		Gentian, ginger, fenugreek, salt, mustard
Pratt's Food	2085	1905	W. LaFayette	8.9		11.6		Gentian, salt, wheat and corn product
Pratt's Conditioner.....	2116	1906	W. LaFayette	4.6		10.0		Gentian, salt, fenugreek, ground flax pods
CONDIMENTAL POULTRY FOODS, REGISTERED								
Brinkman, W. E., Fort Wayne, Ind. Superior Poultry Food.....	1507	1920	Fort Wayne	2.5	3.6	7.0	11.7	Capsicum, salt, Venetian red, wheat middlings, corn meal
Griffin Co., The W. M., Ft. Wayne, Ind. *Griffin Poultry Compound.....	2138	1908	Ft. Wayne	1.0	3.5	6.0	14.5	Ginger, capsicum, saltpetre, sulphur oyster shell
Ragon Stock Food Co., D. S., Evansville, Ind. Farmers Poultry Feed.....	2022	1903	Evansville	5.6	4.8	16.3	15.7	Ginger, gentian, sassafras, saltpetre, salt, wheat product
CONDIMENTAL POULTRY FOODS, NOT REGISTERED								
Fleck, J. J., Tiffin, Ohio. **Fleck's Poultry Powder.....	2081		LaFayette	9.5		16.4		Gentian, capsicum, resin, bone product, sajabean
Pratt Food Co., Philadelphia, Pa. *Pratt's Egg Producer.....	2083		W. LaFayette	4.5		8.4		Gentian, capsicum, Venetian red, sulphur and exhausted portions of spices
MISCELLANEOUS SAMPLES.								
Fleck, J. J., Tiffin, Ohio. Fleck's Stock Powder.....	2082		LaFayette	9.9		2.9		Charcoal, salt, sulphur, Epsom salts, wheat product

*—Before registration

**—Not registered

*5.8% sulphur removed from ether extract.

TABLE VIII.—Report of Inspection of Feeds Collected, July 1, 1909 to January 1, 1910

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
WHEAT BRAN								
Ahr & Singer, Monroeville, Ind. Wheat Bran-----	1506	3929	Monroeville-----	3.8	3.8	14.0	16.4	
Akin-Erakine Milling Co., The, Evansville, Ind. "Pure Winter Wheat Bran"-----	85	3198	Evansville-----	3.1	4.9	15.6	16.3	
Akron Milling Co., The, Akron, Ind. *Wheat Bran-----	2796	4099	Akron-----	3.9	3.2	14.0	16.6	
Amo Milling Co., Amo, Ind. Amo Milling Co.'s Wheat Bran-----	355	3300	Amo-----	3.0	4.0	14.0	17.0	
Angola Flouring Mills, Angola, Ind. Angola Flouring Mills Wheat Bran-----	1098	4018	Angola-----	3.8	3.5	14.0	16.9	
Atlas Flour Mill, Milwaukee, Wis. **Wheat Bran-----		3632	Crown Point-----		6.0		17.8	Chaff, corn cockle, bindweed
Barrett Elevator Co., Greenfield, Ind. Bran-----	2349	3349	Greenfield-----	3.5	3.9	14.0	16.7	
Beanblossom & Sons, D. B., Mauckport, Ind. Wheat Bran-----	1075	3123	Mauckport-----	3.8	3.9	14.0	14.9	Screenings, corn cockle
Wheat Bran-----	1075	3499	Mauckport-----	3.8	3.6	14.0	16.5	
Beckman Supply Co., The, Hammond, Ind. Wheat Bran-----	1347	3573	Hammond-----	3.0	5.1	12.0	14.6	Corn cockle, chaff
Bell, W. H., Michigan City, Ind. Wheat Bran-----	2729	3650	Michigan City--	3.9	3.8	14.0	15.1	Screenings
Bender & Kessens, Siberia, Ind. Bender & Kessens Wheat Bran-----	738	3505	Siberia-----	3.7	4.3	14.0	17.3	
Bergenroth Bros., Troy, Ind. Bergenroth's Wheat Bran-----	153	3369	Troy-----	3.8	4.1	14.0	16.2	Screenings
Bluffton Milling Co., Bluffton, Ind. Wheat Bran-----	661	4177	Bluffton-----	3.8	4.1	14.0	17.3	
Bock, Leonard, Argos, Ind. Wheat Bran-----	550	4159	Argos-----	3.7	4.2	14.0	14.2	Corn bran
Boehmer & Ritzer, Scott, Ind. Wheat Bran-----	1628	4063	Scott-----	3.8	4.0	14.0	15.9	
Boelter, C. F., Union Mills, Ind. Boelter's Wheat Bran-----	920	3545	Union Mills-----	3.8	4.3	14.0	14.4	
Boonville Milling Co., Boonville, Ind. Boonville Milling Company's Wheat Bran-----	929	3333	Boonville-----	3.7	3.9	14.0	14.6	Screenings
Boston Milling Co., Eckerty, Ind. Bobbitts Wheat Bran-----	806	3503	Eckerty-----	3.7	4.4	14.0	17.6	
Bridgeton Roller Mills, Bridgeton, Ind. Wheat Bran-----	642	3719	Bridgeton-----	3.8	4.6	14.0	17.7	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Brose, George, Evansville, Ind. Bran	982	3157	Evansville	3.2	4.3	15.7	15.4	Corn cockle, chaff
Brudl & Co., Jos., New Haven, Ind. Wheat Bran	585	3982	New Haven	3.8	4.0	14.0	17.1	
Buck, F. P., Pleasant Lake, Ind. Wheat Bran	1708	4019	Pleasant Lake	3.7	4.6	14.0	15.1	Screenings
Bunker Hill Milling Co., Evansville, Ind. Wheat Bran	706	3154	Evansville	3.8	4.2	14.0	14.9	
Cable & Keller, Richmond, Ind. Bran	674	3415	Richmond	3.2	4.0	12.0	14.4	
Calvert Mills, Trevlac, Ind. Bran	1779	3109	Trevlac	3.9	4.1	14.0	15.5	
Carlisle Mill & Elevator Co., Carlisle, Ind. Wheat Bran	790	3283	Carlisle	3.7	3.9	14.0	16.5	
Wheat Bran	790	3331	Carlisle	3.7	3.4	14.0	17.9	
Carpenter, B. O., Perrysville, Ind. "Wheat Bran"	344	3666	Perrysville	3.8	3.7	14.0	15.6	
Cauble, O. L., Pekin, Ind. Wheat Bran	1018	3478	Pekin	3.8	4.2	14.0	17.6	
Wheat Bran	1018	4124	Pekin	3.8	3.5	14.0	15.9	
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Wheat Bran	421	3709	Cayuga	3.8	4.7	14.0	15.5	
City Mills, Huntington, Ind. City Mills Wheat Bran	1811	3794	Huntington	3.8	4.1	14.0	15.8	
Clark Bros., Hagerstown, Ind. Wheat Bran	2563	3753	Hagerstown	3.2	3.8	12.0	16.6	
Coal City Milling Co., Coal City, Ind. Coal City Milling Co. Wheat Bran	521	3126	Clay City	4.0	4.0	14.0	15.2	
Coppes, Zook & Mutschler Co., Nappanee, Ind. Bran	3610	3589	Nappanee	3.6	4.7	13.5	15.9	
Bran	3610	4083	LaGrange	3.6	4.2	13.5	15.8	
Corunna Mills, Corunna, Ind. Wheat Bran	1617	4090	Corunna	3.9	3.3	14.0	16.6	
Corydon Milling Company, The, Corydon, Ind. The White Mill Wheat Bran	100	3494	Corydon	3.8	3.8	14.0	16.4	
Crandal, L. W., Fremont, Ind. Wheat Bran	1653	3969	Fremont	3.8	4.9	14.0	16.6	
Davis & Johnson, Coatsville, Ind. Davis & Johnson's Wheat Bran	439	3303	Coatsville	3.8	4.4	14.1	13.5	Mixture bran and shorts
Detroit Milling Co., Detroit, Mich. Adrian Winter Wheat Bran	2753	4149	Hudson	3.5	4.0	14.0	15.5	Screenings
Dilger Bros., Mariah Hill, Ind. Dilger Bros.' Wheat Bran	33	3334	Mariah Hill	3.8	4.0	14.0	16.8	
Dilger Bros.' Wheat Bran	33	3515	Mariah Hill	3.8	3.2	14.0	15.5	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C		Guaranteed	Found	Guaranteed	Found	
Donmeyer, Gardner & Co., Peoria, Ill. Pure Wheat Bran.....	2611	3728	West Lafayette.	4.0	5.1	14.0	17.2	
Eagle Roller Mill Co., New Ulm, Minn. Coarse Wheat Bran.....	2224	3845	Farmland.....	4.1	5.1	14.9	16.2	
Eckhart & Swan Milling Co., Chicago, Ill. Wheat Bran.....	963	3601	Hammond.....	3.0	4.3	14.0	15.4	
Edwardsport Milling Co., Edwardsport, Ind. Edwardsport Milling Co., Wheat Bran....	720	3674	Edwardsport....	3.7	3.7	14.0	17.2	
Elnora Milling Co., The, Elnora, Ind. Wheat Bran.....	388	3073	Elnora.....	3.1	3.7	14.5	17.8	
Emmert, C. B., Clarksburg, Ind. Wheat Bran.....	737	3423	Clarksburg.....	4.0	3.7	15.4	17.7	Corn cockle
Enterprise Mill Co., The, Bicknell, Ind. Enterprise Wheat Bran.....	497	3876	Bicknell.....	3.8	4.5	14.0	18.1	
Farmland City Flour Mills, The, Farmland, Ind. Wheat Bran.....	1650	3410	Farmland.....	3.8	4.5	14.0	15.4	
Flack Bros., East Chicago, Ind. Wheat Bran.....	1381	3577	East Chicago....	3.5	4.7	12.0	16.4	Screenings
Forrest Park Mills, Terre Haute, Ind. Wheat Bran.....	1776	3735	Terre Haute....	3.8	4.3	14.0	17.7	
Freelandville Flouring Mill Co., Freelandville, Ind. Wheat Bran.....	2489	3871	Freelandville....	3.3	3.2	14.0	16.1	
Fremont Flouring Mills, Fremont, Ind. Fremont Flouring Mills Wheat Bran.....	1657	3971	Fremont.....	3.8	4.0	14.0	13.8	
Fyke Milling Co., LaGrange, Ind. Wheat Bran.....	1814	4030	LaGrange.....	3.8	3.8	14.0	14.3	
Globe Mills, The, Fort Wayne, Ind. The Globe Mills Wheat Bran.....	425	3906	Fort Wayne....	3.8	3.5	14.0	16.1	Corn bran
Graft Bros., Winchester, Ind. Graft Bros.' Wheat Bran.....	1182	3405	Winchester.....	3.8	4.3	14.0	18.1	
Hall Milling Co., W. C., Brazil, Ind. Hall's Wheat Bran.....	412	3280	Brazil.....	3.8	3.8	14.0	15.0	
Hampton, W. D., Worthington, Ind. Wheat Bran.....	1124	3998	Worthington....	3.8	3.0	14.0	16.6	
Harbeck, Wm., Valparaiso, Ind. Wheat Bran.....	1408	362	Valparaiso....	3.8	5.4	14.0	16.6	Screenings
Hardinsburg Milling Co., Hardinsburg, Ind. Hardinsburg Milling Co.'s Wheat Bran..	422	309	Hardinsburg....	3.7	3.7	14.0	17.6	
Hawk Bros. Milling Co., Mongo, Ind. Wheat Bran.....	1819	402	Mongo.....	3.8	3.9	14.0	15.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official Inspection C.		Guaranteed	Found	Guaranteed	Found	
Haysville Milling Company, Haysville, Ind. Haysville Milling Company's Wheat Bran	847 3808	Haysville.....	3.7	4.9	14.0	17.0	
Heaton & Co., E. H., Indianapolis, Ind. Wheat Bran	740 3863	Indianapolis.....	3.7	4.1	14.0	17.5	
Hesse Bros. & Co., Orleans, Ind. Wheat Bran	941 4051	Orleans.....	3.8	4.0	14.0	17.5	Mixture bran and middlings
Heltschmidt, A. C., Michigan City, Ind. Wheat Bran	1326 3654	Michigan City.....	3.8	3.9	14.0	16.0	
Hendry & Bassett, Angola, Ind. Wheat Bran	1635 3937	Angola.....	3.8	5.1	14.0	14.5	
Henry Company, The, Terre Haute, Ind. Henry's Wheat Bran	2089 3733	Terre Haute.....	4.0	4.8	15.0	18.7	
Hermann & Co., J. G., Indianapolis, Ind. Hermann's Choice Bran	2089 3147	Indianapolis.....	3.8	4.7	14.0	14.8	Screenings
Hering Co., J., Shelbyville, Ind. Bran	829 3293	Shelbyville.....	4.0	3.8	13.0	13.5	
Hibblitt Mill Company, Muncie, Ind. "Wheat Bran"	520 3849	Muncie.....	3.8	3.9	14.0	17.3	Corn bran
High Street Milling Co., Muncie, Ind. High Street Milling Company's Wheat Bran	976 3658	Muncie.....	4.0	4.7	15.4	16.6	
Hill, Peter, Sanborn, Ind. Wheat Bran	2494 3808	Sanborn.....	3.0	3.6	14.0	17.7	
Hillands & Co., R. P., Bainbridge, Ind. Hillands Wheat Bran	564 3461	Bainbridge.....	3.8	3.9	14.0	17.8	
Hosmer, Otis I., Doolittle Mills, Ind. Otis I. Hosmer Wheat Bran	1589 3503	Doolittle Mills.....	3.7	3.7	14.0	17.1	
Huber & Schultz, Poland, Ind. Bran	895 3133	Poland.....	3.8	4.4	14.0	15.2	
Hunter Bros. Milling Co., St. Louis, Mo. Pure Wheat Bran	381 3708	Terre Haute.....	3.5	4.2	14.0	18.1	Screenings
Huntington Mill Co., Huntington, Ind. Bran	491 3799	Huntington.....	3.6	3.5	14.3	16.3	
Huntington Mill Co., Huntington, Ind. Bran	491 3800	Huntington.....	3.6	3.6	14.2	16.3	
Hutchinson Mill Co., The, Hutchinson, Kan. Bran	2000 3645	Michigan City.....	4.0	4.9	15.5	16.6	
Indiana Milling Co., Terre Haute, Ind. Wheat Bran	2595 3739	Terre Haute.....	3.8	4.4	14.0	17.4	Cheat, bindweed, corn cockle
Katterjohn, A. F., Lynnvillle, Ind. A. F. Katterjohn's Wheat Bran	487 3329	Lynnvillle.....	3.7	4.2	14.0	17.0	
Kell, C. H., Indianapolis, Ind. Wheat Bran	1793 3267	Indianapolis.....	3.7	4.8	14.0	15.0	
Kellman Co., The, L., Dyer, Ind. Wheat Bran	2099 3604	Dyer.....	3.5	5.0	14.0	17.4	

*—Before registration

..—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Kellman-Kimmet Co., The, Lowell, Ind. Wheat Bran.....	1373 3015	Lowell.....	3.5	4.0	13.0	17.3	
Kennedy & Son, G. W., Shelbyville, Ind. Bran	114 3101	Edinburg.....	3.5	4.2	13.5	15.0	Corn cockle
Klondike Milling Company, The, Danville, Ind. Wheat Bran	374 3453	Danville.....	3.7	4.4	14.4	18.3	
Kriwitz Bros., Kendallville, Ind. Kriwitz Wheat Bran.....	1043 4070	Kendallville.....	3.5	4.4	14.0	17.5	
Kuhn & Co., John H., Michigan City, Ind. Wheat Bran	1043 3543	Michigan City....	3.0	4.0	14.0	16.9	Screenings
LaPorte Milling Co., LaPorte, Ind. Wheat Bran	2055 3073	LaPorte.....	3.3	4.3	14.0	15.3	
Laubacher & Sons, J. W., Highland (R. F. D. No. 6) Evansville, Ind. Bran	702 3173	Highland.....	2.0	4.0	8.0	16.1	
Leesburg Grain & Milling Co., The, Lees- burg, Ind. Wheat Bran	305 4045	Leesburg.....	3.3	3.7	14.0	14.9	
Lewis Milling Co., Lewis, Ind. Wheat Bran	540 3306	Lewis.....	3.3	4.5	14.0	18.9	
Ligonier Milling Co., Ligonier, Ind. Ligonier Milling Co.'s Wheat Bran.....	379 4033	Ligonier.....	3.3	4.3	14.0	15.2	Screenings
Lindauer, Ferd, Fulda, Ind. Wheat Bran	1030 3330	Fulda.....	3.3	4.3	14.0	16.3	
Lingeman & Adams, Brownsburg, Ind. Bran	1409 3454	Brownsburg....	3.3	4.0	14.0	17.3	
Little Crow Milling Co., Warsaw, Ind. Little Crow Wheat Bran.....	330 4040	Warsaw.....	3.3	3.7	14.0	15.3	
Long, John C. Long's Mill, R. F. D. No. 2, Chesterton, Ind. Wheat Bran	1406 3333	Chesterton.....	3.3	3.9	14.0	17.0	
Loogootee Flour & Feed Exchange, Loo- gootee, Ind. Wheat Bran	633 3333	Loogootee.....	3.6	3.7	14.0	16.5	
Lorig, Theodore, LaPorte, Ind. Wheat Bran	734 3533	Chesterton.....	3.3	5.3	14.0	16.4	Large amount of middlings
Lynn Mill & Elevator Co., Lynn, Ind. Wheat Bran	1937 3330	Lynn.....	3.5	4.4	13.5	15.4	
Lyons Mill & Elevator Co., Lyons, Ind. Reliable Wheat Bran.....	573 4000	Lyons.....	3.7	4.3	14.0	16.5	Mixture bran and middlings, cora. cockle
Macy Milling Co., Macy, Ind. Wheat Bran	710 4011	Macy.....	3.7	3.9	14.0	16.5	
Manja, Charles, Kingsbury, Ind. Wheat Bran.....	1313 3076	Kingsbury.....	3.3	4.1	14.0	14.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection C.	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Martinsville Milling Co., The, Martinsville, Ind. Wheat Bran.....	81	3319 Martinsville.....	3.0	4.1	14.0	17.5	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Wheat Bran.....	450	3888 Fort Wayne.....	3.8	4.1	14.0	16.9	
Means & Witt, Lebanon, Ind. Wheat Bran.....	86	3430 Lebanon.....	3.5	3.5	14.0	17.4	
Middlebury Milling Co., Middlebury, Ind. Wheat Bran.....	661	4067 Middlebury.....	3.8	4.1	14.0	13.8	
Miesenhelder Bros., Sullivan, Ind. Wheat Bran.....	860	3319 Sullivan.....	4.0	3.9	15.4	16.7	
Morgantown Milling Co., Morgantown, Ind. Wheat Bran.....	1303	3113 Morgantown.....	3.7	3.9	14.0	14.7	
Wheat Bran.....	1303	3116 Mahalaesville.....	3.7	4.0	14.0	14.6	
Mueller & Sons, Peter, Ferdinand, Ind. Wheat Bran.....	645	3330 Ferdinand.....	3.7	4.1	14.0	16.0	
Myers & Bros. Milling Co., T. C., Epsom, Ind. Wheat Bran.....	1843	3099 Epsom.....	3.8	3.8	14.0	16.1	
Myers & Hartsock, Wilmot, Ind. Wheat Bran.....	1579	4081 WHmot.....	3.8	3.0	14.0	15.8	
McCoy Bros., Liberty, Ind. Wheat Bran.....	1428	3413 Liberty.....	3.5	3.9	14.2	17.4	
McKenzie Cereal Food & Milling Co., Quincy, Mich. *McKenzie's Pure Wheat Bran.....	2323	4065 Middlebury.....	3.8	3.9	14.0	15.9	
McNely, Thos. N., Walkerton, Ind. Wheat Bran.....	1448	3549 Walkerton.....	3.8	4.3	14.0	13.4	Buckwheat hulls
Nesbit & Co., I. A., Sullivan, Ind. Wheat Bran.....	861	3314 Sullivan.....	4.0	3.5	15.4	17.0	
New Carlisle Milling Co., New Carlisle, Ind. Wheat Bran.....	1316	3650 New Carlisle.....	3.5	3.6	14.0	14.8	
Nlexer & Co., Monroeville, Ind. Wheat Bran.....	1503	3320 Monroeville.....	3.8	3.8	14.0	17.1	
Paoli Milling Co., The, Paoli, Ind. Wheat Bran.....	626	4048 Paoli.....	3.0	4.6	12.0	18.0	
Parker City Mills, Parker, Ind. Wheat Bran.....	1712	3407 Parker.....	3.8	4.0	14.0	16.9	
Pillsbury-Washburn Flour Mills Co., Ltd., Minneapolis, Minn. Pillsbury's Bran.....	2357	3799 Huntington.....	4.0	5.4	14.5	14.8	Corn cockle, bind-weed
Pillsbury's Bran.....	2357	3084 Angola.....	4.0	5.9	14.5	15.7	
People's Flouring Mill, The, Ashley, Ind. York's Wheat Bran.....	2685	4146 Ashley.....	3.8	3.8	14.0	16.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official Inspection C		Guaranteed	Found	Guaranteed	Found	
Platz, D. A., Shipshewana, Ind. Wheat Bran.....	1616 4061	Shipshewana.....	3.8	5.5	14.0	16.5	
Pressel, S. J., Hagerstown, Ind. Pressel's Wheat Bran.....	141 3756	Hagerstown.....	3.2	3.3	13.0	17.3	
Quebbeman & Temple, Ramsey, Ind. Bran.....	1291 3486	R. R. Ramsey..	4.0	3.9	14.0	16.3	
Quickel, R. G., Hagerstown, Ind. Quickel's Wheat Bran.....	616 3755	Hagerstown.....	3.2	3.7	12.0	17.6	
Raasch, Paul E., Crown Point, Ind. Wheat Bran.....	1359 3612	Hebron.....	3.5	5.2	14.0	14.4	Screenings.
Raschka, Wm., Ainsworth, Ind. Wheat Bran.....	1441 3567	Ainsworth.....	3.5	4.9	14.0	16.1	
Redden & Sons, William, New Paris, Ind. Wheat Bran.....	2118 3323	New Paris.....	2.0	3.4	11.0	14.1	
Redington & Morgan, Rolling Prairie, Ind. Wheat Bran.....	1273 3683	Rolling Prairie	3.8	3.9	14.0	14.3	Corn cockle
Riedel & Gray, Ossian, Ind. Wheat Bran.....	2005 4170	Ossian.....	3.6	3.6	14.0	15.8	
Ripple Milling Co., Mishawaka, Ind. Hudson's Wheat Bran.....	985 4125	Mishawaka	3.8	3.8	14.0	14.7	
Riverside Mill, The, Wolcottville, Ind. Riverside Mills' Bran.....	1620 4073	Wolcottville	3.8	3.5	14.0	15.6	
Rockport Milling Co., The, Rockport, Ind. Kopp's Wheat Bran.....	1196 3363	Rockport.....	3.3	4.0	14.0	16.1	
Roeske Bros., Michigan City, Ind. Wheat Bran.....	1467 3542	Michigan City..	3.8	4.2	14.0	16.0	
Rose Milling Co., Alfordsville, Ind. Bran.....	910 3945	Alfordsville	3.8	3.7	14.0	17.2	Corn cockle
Sanderson, R. N., Orland, Ind. Wheat Bran.....	1736 4017	Orland	3.9	3.8	14.0	16.1	
Schnellville Milling Co., Schnellville, Ind. Schnellville Milling Co.'s Wheat Bran.....	964 3293	Schnellville	3.8	4.7	14.0	16.0	Chaff
Schnellville Milling Co.'s Wheat Bran.....	964 3508	Schnellville	3.9	5.0	14.0	17.2	
Silver Star Mill, Patricksburg, Ind. Bran.....	2120 3130	Patricksburg	3.0	4.5	13.0	15.3	
Sims Grain Co., J. T., Frankfort, Ind. Wheat Bran.....	1179 3440	Frankfort	3.7	4.0	14.0	16.7	
Sloan, J. F., Palestine, Burket P. O., Ind. Sloan's Wheat Bran.....	228 4088	Burket	3.8	3.7	14.0	15.3	
Smeltzly, I. Anson, Ontario, Ind. Wheat Bran.....	2533 4026	Ontario	2.0	2.8	8.0	13.7	
Smith Grain & Milling Co., Warsaw, Ind. Wheat Bran.....	804 4043	Warsaw	3.5	3.6	12.5	15.2	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Smith, Roper & Co., Hobart, Ind. Hobart Wheat Bran.....	78 3564	Hobart.....	3.5	3.4	14.0	16.0	
South Side Cereal Mills, Fort Wayne, Ind. South Side Cereal Mills Wheat Bran.....	588 3908	Fort Wayne.....	3.7	3.6	14.0	15.4	
Southwestern Milling Company, The, Kansas City, Mo. K. C. K. Bran.....	1566 3437	Thorntown	5.2	4.2	15.0	17.6	
K. C. K. Bran.....	1566 3748	Terre Haute.....	5.2	4.2	15.0	15.7	Chaff, weed seeds, stems, small wheat
Spencer & Co., J. W., Veedersburg, Ind. Wheat Bran.....	333 3419	Veedersburg	3.0	4.9	13.0	16.0	
Wheat Bran.....	333 3387	Veedersburg	3.0	4.4	13.0	17.1	
Spink Milling Co., The, Washington, Ind. Wheat Bran	459 3919	Washington	3.5	4.5	13.0	17.0	
St. Anthony Milling Co., St. Anthony, Ind. Wheat Bran	990 3393	St. Anthony.....	3.8	3.8	14.0	16.9	Chaff
Wheat Bran.....	990 3508	St. Anthony.....	3.8	3.9	14.0	17.0	Corn cockle
Star Milling Co., Shoals, Ind. Star Wheat Bran.....	503 3989	Shoals	3.8	3.6	14.0	17.1	Corn cockle
Star Roller Mills, The, Burlington, Ind. Wheat Bran.....	1237 3339	Burlington.....	3.8	4.1	14.0	15.6	
Star & Crescent Milling Co., Chicago, Ill. Star Bran	1330 3597	McCool	4.0	5.5	14.0	16.5	Screenings
Stockley, George, Kendallville, Ind. Wheat Bran	1623 4075	Kendallville	3.8	5.2	14.0	17.6	Corn cockle
Steinehilber Milling Co., Hartford City, Ind. Bran	1919 3923	Muncie	3.8	4.1	14.0	17.0	Corn bran, also wheat middlings
Bran	1919 4013	Hartford City.....	3.8	4.0	14.0	16.6	Corn bran, also wheat middlings
Stokes Milling Co., Watertown, S. D. **Wheat Bran.....	3506	Indiana Harbor	5.1			15.3	
Stoudt, Thomas, South Bend, Ind. Thomas Stoudt's Wheat Bran.....	2234 3999	South Bend.....	3.3	3.8	14.5	14.8	
Street Milling Co., J., LaPorte, Ind. Wheat Bran	702 3506	Porter	3.8	4.1	14.0	14.9	
Wheat Bran.....	702 3681	LaPorte	3.8	4.9	14.0	15.7	Chaff, corn cockle and middlings
Suckow, Wm., Franklin, Ind. Wheat Bran.....	15 3110	Franklin	3.8	4.4	14.0	14.4	
Wheat Bran.....	15 4173	Crothersville	3.8	3.3	14.0	16.6	Mixture bran and middlings
Sunlight Milling Co., Mt. Vernon, Ind. Sunlight Milling Co.'s Wheat Bran.....	723 3909	Mt. Vernon.....	3.8	4.9	14.0	15.7	
Thornburg Milling Co., Martinsville, Ind. Bran	660 3316	Martinsville	3.2	3.5	14.0	18.6	
Thorntown Milling Co., Thorntown, Ind. Wheat Bran.....	684 3433	Thorntown	3.0	3.3	16.0	16.9	
Thurgood, Geo. R., Vincennes, Ind. Bran	1533 3379	Vincennes	3.9	3.9	14.0	16.1	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Wheat Bran.....	1195	4156	Topeka	3.8	4.4	14.0	15.1	Screenings
Travis & Co., Kingsbury, Ind. •Wheat Bran.....	2734	3672	Kingsbury	3.9	4.9	14.0	13.7	Chaff, bindweed.
Tressel & Sons, C., Fort Wayne, Ind. Wheat Bran.....	409	3896	Fort Wayne	3.8	4.0	14.0	17.8	
Union City Milling Co., The, Union City, Ind. Wheat Bran.....	1705	3388	Union City	3.5	4.0	14.1	16.7	
Valentine & Valentine, Franklin, Ind. Wheat Bran.....	983	3253	Franklin	3.8	4.2	14.0	17.0	
Valler & Spies Milling Co., St. Louis, Mo. Wheat Bran.....	1938	3518	Washington	3.5	5.0	14.0	19.1	
Wheat Bran.....	1938	3745	Terre Haute.....	3.5	4.9	14.0	17.2	
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Wheat Bran.....	1402	3629	Valparaiso	3.8	5.3	14.0	15.3	
Victoria Milling Co., Jasper, Ind. Victoria Wheat Bran.....	795	3306	Jasper	3.8	4.7	14.0	17.0	
Viers & Wicks, Rochester, Ind. Viers & Wicks' Wheat Bran.....	319	3269	Rochester	3.0	4.0	14.0	14.6	
Volland Milling Co., The, Fort Wayne, Ind. Volland's Wheat Bran.....	257	3910	Fort Wayne.....	3.8	4.5	14.0	17.4	
Walker & Norris, Washington, Ind. Wheat Bran.....	317	3914	Washington.....	4.0	3.9	15.4	15.5	
Wanatah Roller Mills, Wanatah, Ind. Mitzners Wheat Bran.....	1950	3633	Wanatah.....	3.5	4.1	13.5	16.0	
Washburn-Crosby Co., Minneapolis, Minn. Washburn-Crosby Co.'s Coarse Bran.....	2502	3575	Whiting	4.0	5.5	14.5	16.5	Chaff, corn cockle, weed seeds
Washburn-Crosby Co.'s Coarse Bran.....	2502	4152	Topeka	4.0	5.5	14.5	16.2	Chaff, corn cockle
Watson Milling Co., Corydon, Ind. Bran	2661	3496	Corydon	4.0	3.8	15.4	16.2	
Wellington & Son, Anderson, Ind. Wellington's A. X. A. Bran.....	74	3977	Muncie	3.8	4.1	15.7	17.0	
West Baden Milling Co., West Baden, Ind. Wheat Bran.....	1010	4052	West Baden.....	3.2	4.3	14.0	17.6	Mixture bran and middlings
Wildcat Roller Mills, Cutler, Ind. Wheat Bran.....	1092	3341	R. R. Cutler... ..	3.8	4.3	14.0	17.1	
Wilkinson & Co., T. B., Knightstown, Ind. Bran	120	3353	Knightstown ..	3.2	4.0	13.0	16.9	
Williamsport Milling Company, Williamsport, Ind. Wheat Bran.....	3173	3611	Williamsport ..	3.9	4.2	14.0	14.9	
Yohn and Strombeck, North Webster, Ind. Wheat Bran.....	3404	4085	North Webster ..	3.8	3.8	14.0	14.7	

*—Before registration

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TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
WHEAT BRAN AND SCREENINGS								
Acme-Evans Co., Indianapolis, Ind.								
Acme Feed	2417	3422	Milan	4.0	4.5	15.0	16.1	
Broadway Mills, Vincennes, Ind.								
Bran and Screenings	2323	3381	Sullivan	3.7	3.7	14.0	16.4	
Brose & Arnold, Evansville, Ind.								
Bran and Screenings	2257	3150	Evansville	3.7	4.5	14.0	15.8	
Coppes, Zook & Mutschler Co., Nappanee, Ind.								
Mixed Feed	2343	3551	Walkerton	3.0	4.2	15.0	15.0	
Crabbs-Reynolds-Taylor Co., Lafayette, Ind.								
Mixed Feed	2408	3520	Lafayette	3.7	4.6	14.0	17.8	
Gary Supply Co., Gary, Ind.								
*Mixed Feed	2743	3723	Gary	3.9	5.0	14.0	15.4	
Goshen Milling Co., The, Goshen, Ind.								
Mixed Feed	2335	3325	New Paris	4.0	4.1	14.0	14.7	
Mixed Feed	2335	3336	Goshen	4.0	3.9	14.0	15.3	
Harris, J. C., Montgomery, Ind.								
Wheat Bran and Screenings	306	3043	Montgomery ..	3.0	3.7	14.0	16.1	
Home Mill & Grain Co., Mt. Vernon, Ind.								
Mixed Feed	2241	3211	Mt. Vernon	3.8	3.8	14.4	15.5	
Igleheart Brothers, Evansville, Ind.								
Bran and Screenings	2279	3178	Evansville	4.0	4.0	15.0	15.7	
Knoblock & Ginz Milling Co., South Bend, Ind.								
*Mixed Feed	2730	3306	South Bend	3.8	4.1	14.0	14.7	
Loughry Bros. Milling & Grain Co., Monticello, Ind.								
Loughry's Mixed Feed	1946	3521	W. LaFayette ..	3.7	4.8	14.0	16.5	
Moutoux Bros., Evansville, Ind.								
Mixed Feed	1974	3151	Evansville	3.5	4.1	13.5	16.5	
Moyer, W. H., Cory, Ind.								
Wheat Bran and Screenings	2706	3779	Terre Haute	3.5	3.4	14.0	16.7	
New & Cook, Zionsville, Ind.								
Wheat Bran and Screenings	1701	3446	Zionsville	3.5	3.6	13.0	18.3	
Otwell Mill Co., Otwell, Ind.								
Wheat Bran and Screenings	1107	3273	Otwell	3.5	4.1	13.5	16.2	
Phoenix Flour Mill, Evansville, Ind.								
Bran and Screenings	2263	3100	Evansville	4.0	4.2	15.0	15.8	
Red Mill, The, R. R., Fairland, Ind.								
*Mixed Feed	2301	3239	Fairland	3.8	4.2	14.0	15.1	
Schultz & Sons, Elberfeld, Ind.								
Wheat Bran and Screenings	1100	3275	Elberfeld	3.5	4.2	13.5	14.4	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C Official	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Snoddy, M. W., Covington R. F. D. No. 1, Ind. Wheat Bran and Screenings.....	1071 3372	Coal Creek.....	3.5	4.4	13.0	17.3	
Sparks Milling Co., Terre Haute, Ind. Bran and Screenings.....	2696 3764	Terre Haute.....	3.5	4.3	14.0	17.3	
Walker & Co., Peter M., Loogootee, Ind. Bran and Screenings.....	539 3365	Loogootee.....	3.6	3.6	14.0	16.5	
WHEAT BRAN AND SWEEPINGS							
Fourteen Mile Valley Mills, R. F. D. No. 3, Lexington, Ind. Mixed Wheat Bran.....	1301 3483	Lexington.....	3.9	3.9	14.0	15.8	
STANDARD WHEAT MIDDLINGS AND SHORTS							
Ahr & Singer, Monroeville, Ind. Wheat Middlings.....	1505 3322	Monroeville.....	4.0	4.8	10.0	17.5	
Akin-Erskine Milling Co., The, Evansville, Ind. "Pure Winter Wheat Fancy Shorts".....	36 3196	Evansville.....	4.5	3.9	16.3	16.3	
Akron Milling Co., The, Akron, Ind. *Wheat Middlings.....	3735 4037	Claypool.....	4.0	4.3	14.0	15.6	
*Wheat Middlings.....	3736 4100	Akron.....	4.0	4.3	14.0	15.6	
Amo Milling Co., Amo, Ind. Amo Milling Co.'s Wheat Middlings.....	354 3301	Amo.....	3.7	3.4	14.1	14.7	
Angola Flouring Mills, Angola, Ind. Angola Flouring Mills Middlings.....	1097 4021	Angola.....	4.0	3.9	14.0	14.7	
Baldwin, Jr., Dwight M., Minneapolis, Minn. Dwight Flour Mills Pure Wheat Flour Middlings.....	2555 3590	Chesterton.....	5.0	5.4	17.0	16.1	
Dwight Flour Mills Pure Shorts.....	2556 3589	Chesterton.....	4.5	5.5	14.5	15.9	
Barrett Elevator Co., Greenfield, Ind. Shorts.....	2348 3347	Greenfield.....	4.0	3.4	14.0	16.5	Low grade flour
Beanblossom & Sons, D. B., Mauckport, Ind. Wheat Middlings.....	1074 3123	Mauckport.....	4.0	3.1	14.0	13.1	Corn cockle
Wheat Middlings.....	1074 3426	Mauckport.....	4.0	3.5	14.0	15.4	
Bell, W. H., Michigan City, Ind. *Wheat Middlings.....	3730 3651	Michigan City.....	4.0	4.0	14.0	15.0	
Bergenroth Bros., Troy, Ind. Middlings.....	3025 3398	Troy.....	4.0	4.9	15.0	18.1	
Bleker Bros., Hammond, Ind. Wheat Middlings.....	1838 3598	Hammond.....	3.0	4.7	12.0	16.7	
Blanton Milling Co., The, Indianapolis, Ind. Blanton's Middlings.....	47 3194	Indianapolis.....	3.6	4.2	16.1	16.1	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Bluffton Milling Co., Bluffton, Ind.								
Wheat Shorts -----	660	4178	Bluffton -----	4.5	4.5	14.9	18.0	
Wheat Shorts -----	660	4179	Bluffton -----	4.5	5.9	14.9	19.8	
Bock, Leonard, Argos, Ind.								
Wheat Middlings -----	548	4187	Argos -----	4.0	5.4	14.0	16.1	
Boehmer & Ritzer, Scott, Ind.								
Wheat Middlings -----	1697	4068	Scott -----	4.0	5.3	14.0	17.5	
Boelter, C. F., Union Mills, Ind.								
*Wheat Shorts -----	3705	3546	Union Mills --	3.9	5.4	14.0	16.2	
Boonville Milling Co., Boonville, Ind.								
Shorts -----	980	3334	Boonville -----	4.0	4.0	14.0	15.6	
Bourbon Elevator & Milling Company, Bourbon, Ind.								
Bourbon Middlings -----	166	3686	Valparaiso -----	4.0	4.7	14.0	15.1	
Brizius Co., The, Chas. W., Evansville, Ind.								
"Eagle Shipstuff" -----	2420	3336	Newburgh -----	4.3	3.5	15.8	15.6	
Broadway Mills, Vincennes, Ind.								
Wheat Middlings -----	801	3818	Sullivan -----	3.7	3.7	14.0	15.4	
Brudi & Co., Jos., New Haven, Ind.								
Middlings -----	584	3931	New Haven --	4.0	3.8	14.0	15.5	
Bunker Hill Milling Co., Evansville, Ind.								
Fancy Shorts -----	705	3155	Evansville -----	4.0	4.7	14.0	16.8	
Cable & Keller, Richmond, Ind.								
Middlings -----	675	3410	Richmond -----	3.7	3.6	14.0	13.6	
Canine Bros.' Milling Co., Clinton, Ind.								
Wheat Middlings -----	1875	3733	Clinton -----	4.0	3.5	14.0	15.5	
Carpenter, B. O., Perrysville, Ind.								
"Wheat Middlings" -----	343	3667	Perrysville -----	4.0	4.4	14.0	16.3	
Caulle, O. L., Pekin, Ind.								
Wheat Shorts -----	1010	3479	Pekin -----	4.0	5.0	14.0	18.2	
Wheat Shorts -----	1016	4136	Pekin -----	4.0	4.3	14.0	17.3	
Cayuga Milling Co., Cayuga, Ind.								
Cayuga Milling Co.'s Wheat Shorts -----	420	3704	Cayuga -----	4.0	4.7	14.0	16.3	
City Mills, Huntington, Ind.								
City Mills Wheat Middlings -----	1810	3796	Huntington -----	4.0	4.2	14.0	16.2	
Clark Bros., Hagerstown, Ind.								
Wheat Middlings -----	3007	3752	Hagerstown --	3.7	4.8	14.0	18.0	
Clayton Milling Co., Clayton, Ind.								
Clayton Wheat Middlings -----	2114	3299	Clayton -----	3.9	5.1	14.2	16.3	
Coal City Milling Co., Coal City, Ind.								
Coal City Milling Co. Wheat Shorts -----	530	3125	Clay City -----	4.0	3.3	14.0	14.3	

*—Before registration

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TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection		Guaranteed	Found	Guaranteed	Found	
Coppes, Zook & Mutschler Co., Nappanee, Ind. Middlings -----	2609	3540	Nappanee -----	4.7	5.5	15.5	17.9	
Middlings -----	2609	4032	Nappanee -----	4.7	4.1	15.5	17.2	
Corbin Milling Co., New Harmony, Ind. Corbin's Wheat Middlings -----	314	3223	New Harmony -----	4.0	4.7	14.0	17.7	
Corunna Mills, Corunna, Ind. Wheat Middlings -----	1619	4091	Corunna -----	4.0	3.1	14.0	14.7	
Crabbs-Reynolds-Taylor Co., LaFayette, Ind. Wheat Middlings -----	2467	3530	LaFayette -----	4.0	4.9	14.0	16.7	
Crandal, L. W., Fremont, Ind. Wheat Middlings -----	1651	3908	Fremont -----	4.0	4.5	14.0	16.1	
Croxton, James W., Cloverdale, Ind. Middlings -----	246	3465	Cloverdale -----	3.8	4.5	14.0	16.8	
Deck, James M., Roann, Ind. Pure Wheat Middlings -----	196	3773	Denver -----	4.0	3.9	14.0	16.1	
Detroit Milling Co., Detroit, Mich. Apex Middlings -----	2752	4148	Hudson -----	4.5	4.7	15.5	16.4	
Dilger Bros., Mariah Hill, Ind. Dilger Bros.' Wheat Shorts -----	33	3514	Mariah Hill --	4.0	4.5	14.0	16.4	
Dragoo, B. S. & S. H., Yorktown, Ind. Middlings -----	3044	3963	Muncie -----	2.5	3.7	14.0	16.0	
Edwardsport Milling Co., Edwardsport, Ind. Edwardsport Milling Co. Wheat Shorts ..	727	3375	Edwardsport --	4.0	4.6	14.0	17.9	
Egloff Sons, A., St. Meinrad, Ind. Shorts -----	2590	3323	St. Meinrad ---	4.0	3.8	15.0	16.2	
Shorts -----	2590	3513	St. Meinrad ---	4.0	4.3	15.0	17.4	
Emison, J. & S., Vincennes, Ind. Middlings -----	1536	3317	Sullivan -----	4.0	4.7	14.0	17.1	
Enterprise Mill Co., The, Bicknell, Ind. Enterprise Wheat Middlings -----	498	3377	Bicknell -----	4.0	4.5	14.0	17.3	
Farmland City Flour Mills, The, Farmland, Ind. Wheat Shorts -----	1658	3411	Farmland -----	4.0	4.3	14.0	18.4	
Flack Bros., East Chicago, Ind. Wheat Middlings -----	1333	3573	East Chicago --	3.5	4.7	12.0	17.1	
Follett & Co., R. J., Carmel, Ind. Wheat Shorts -----	2136	3379	Carmel -----	3.0	4.1	14.0	17.7	
Fredericksburg Milling Co., The, Fredericksburg, Ind. Wheat Shorts -----	2230	4098	Fredericksburg	3.0	3.1	3.0	14.5	
Freelandville Flouring Mill Co., Freelandville, Ind. Wheat Shorts -----	2608	3373	Freelandville --	4.0	5.4	4.0	19.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Fremont Flouring Mills, Fremont, Ind. Fremont Flouring Mills Wheat Middlings.....	1655 3870	Fremont -----	4.0	4.2	14.0	15.8	
Fritch, J. D., Frankfort, Ind. Fritch's Wheat Middlings.....	309 3443	Frankfort ----	3.8	3.9	14.0	16.7	
Fyke Milling Co., LaGrange, Ind. Middlings	1815 4029	LaGrange ----	3.8	4.6	14.0	15.5	
Gary Supply Co., Gary, Ind. Wheat Middlings	1379 3724	Gary -----	4.0	6.5	14.0	19.0	
Globe Mills, The, Fort Wayne, Ind. The Globe Mills Wheat Shorts.....	426 3905	Fort Wayne---	4.0	4.5	14.0	16.8	
Goshen Milling Company, The, Goshen, Ind. Middlings	65 3822	Goshen -----	4.1	4.6	14.5	15.9	
Graft Bros., Winchester, Ind. Graft Bros. Wheat Middlings.....	1181 3403	Winchester ---	4.0	3.8	14.0	16.4	
Hall Milling Co., W. C., Brazil, Ind. Hall's Wheat Shorts.....	561 3281	Brazil -----	4.0	3.6	14.0	16.4	
Hampton, W. D., Worthington, Ind. Wheat Shorts	2220 3999	Worthington --	2.3	3.0	12.8	15.7	
Hanover Star Milling Co., Germantown, Ill. Hanover Star Milling Co., Wheat Mid- dlings	744 3497	Corydon -----	5.0	4.7	15.4	17.0	
Hardinsburg Milling Co., Hardinsburg, Ind. Wheat Shorts	2263 4093	Hardinburg ---	3.5	5.2	13.0	18.7	
Harris Milling Co., Greencastle, Ind. Harris' Middlings.....	211 3467	Greencastle ---	3.6	5.2	14.5	20.1	
Haysville Milling Company, Haysville, Ind. Haysville Milling Company's Wheat Shorts	846 3307	Haysville -----	4.0	3.5	14.0	16.6	
Hazleton Milling Co., The, Hazleton, Ind. Standard Wheat Shorts.....	771 3247	Hazleton -----	4.0	4.9	14.0	18.3	
Standard Wheat Shorts.....	771 3364	Hazleton -----	4.0	5.4	14.0	19.1	
Heitschmidt, A. C., Michigan City, Ind. Middlings	2049 3656	Michigan City..	4.0	3.6	14.0	13.9	Low grade flour
Hendry & Bassett, Angola, Ind. Wheat Middlings	1636 3969	Angola-----	4.0	5.0	14.0	15.6	
Hering Co., J., Shelbyville, Ind. Shorts	829 3287	Shelbyville....	4.0	4.1	12.0	18.4	Corn cockle
Hermann & Co., J. G., Indianapolis, Ind. Hermann's Choice Middlings.....	2422 3149	Indianapolis ---	4.0	5.2	14.0	17.3	
High Street Milling Co., Muncie, Ind. High Street Milling Company's Shorts..	977 3369	Muncie -----	4.5	5.6	14.9	19.3	
Hillands & Co., R. P., Bainbridge, Ind. Hillands Shorts	563 3462	Bainbridge -----	4.0	3.5	14.0	16.6	
Hill, Peter, Sandborn, Ind. Wheat Shorts	614 3369	Sandborn -----	4.5	4.6	14.9	18.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Home Mill & Grain Co., Mt. Vernon, Ind. Home Mill & Grain Co.'s Wheat Shipstuff	600	3212	Mt. Vernon	5.6	4.4	17.8	16.8	
Hubbard & Co., W. H., Monrovia, Ind. Shorts	993	3326	Monrovia	5.0	4.6	14.0	13.7	
Hunsicker & Bender, Bluffton, Ind. "A Wheat Shorts"	1559	3900	Fort Wayne	4.0	3.2	14.0	14.7	
"A Wheat Shorts"	1559	4181	Bluffton	4.0	4.3	14.0	16.8	
Huntington Mill Co., Huntington, Ind. Shorts	496	3797	Huntington	3.9	5.4	14.3	17.4	
Hutchinson Mill Co., The, Hutchinson, Kan. Shorts	2001	3646	Michigan City	5.0	4.4	19.7	17.0	
Igleheart Bros., Evansville, Ind. Igleheart's Bulk Middlings	112	3180	Evansville	4.0	5.0	15.0	17.9	
Indiana Milling Co., Terre Haute, Ind. Wheat Middlings	2594	3738	Terre Haute	4.0	4.9	14.0	17.7	
Inglefield Milling Co., Inglefield, Ind. Inglefield Shorts	1589	3205	Inglefield	4.5	4.8	14.9	17.2	
Jessup, Nevins & Co., Bloomington, Ind. Shorts	1052	3711	Bloomington	4.0	4.6	14.0	16.4	
Katterjohn, Aug. F., Lynnville, Ind. Katterjohn's Wheat Middlings	1957	3328	Lynnville	4.0	4.0	14.0	15.8	Mixture bran and shorts
Katterjohn, O. F., Boonville, Ind. Wheat Shorts	1089	3331	Boonville	4.0	4.4	14.0	17.0	
Keilman Co., The L., Dyer, Ind. Wheat Middlings	3700	3603	Dyer	4.0	6.3	14.0	19.7	
Keilman Kimmert Co., The, Lowell, Ind. Wheat Middlings	1372	3614	Lowell	3.5	5.1	12.0	18.0	
Klemm, Geo. J., Attica, Ind. Wheat Middlings	2517	3383	Attica	3.4	3.8	14.0	15.6	
Wheat Middlings	2517	3637	Attica	3.4	4.3	14.0	16.3	
Klondike Milling Co., Danville, Ind. *Wheat Middlings	2653	3459	Danville	3.5	3.6	13.5	17.1	
Knoblock & Ginz Milling Co., South Bend, Ind. Wheat Middlings	1023	3693	South Bend	4.0	4.5	14.0	15.1	
Kriwitz Bros., Kendallville, Ind. Kriwitz Bros.' Wheat Middlings	1041	4008	Kendallville	5.0	5.4	15.4	17.3	
Kuhn & Co., John H., Michigan City, Ind. Wheat Middlings	1644	3649	Michigan City	3.0	5.8	15.0	18.9	
LaFayette Milling Co., The, LaFayette, Ind. Middlings	116	3532	LaFayette	4.0	5.3	14.0	17.4	
LaPorte Milling Co., LaPorte, Ind. Wheat Middlings	2066	3679	LaPorte	4.0	5.2	14.0	15.6	Chaff, corn cockle
Wheat Middlings	2066	4086	Piercetown	4.0	5.4	14.0	16.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Lash Flour Mills, Fred B., Farmersburg, Ind. Lash's Shorts	997	3309	Farmersburg	4.0	6.9	14.0	21.3	
Leesburg Grain & Milling Co., The, Leesburg, Ind. Middlings	306	4046	Leesburg	4.0	4.4	14.0	15.3	
Lewis Milling Co., Lewis, Ind. Wheat Shorts	541	3307	Lewis	4.0	4.0	14.0	17.0	
Ligonier Milling Co., Ligonier, Ind. Ligonier Milling Co.'s Wheat Middlings	330	4039	Ligonier	4.0	5.0	14.0	16.5	
Lindauer, Ferd., Fulda, Ind. Wheat Shorts	1036	3363	Fulda	4.0	5.8	14.0	18.7	
Linton Mill Co., The, Linton, Ind. Wheat Shorts	507	4010	Linton	4.0	5.3	14.0	19.5	
Little Crow Milling Co., Warsaw, Ind. Little Crow Wheat Middlings	351	4041	Warsaw	4.0	4.3	14.0	15.6	
Livonia Flouring Mills, Livonia, Ind. Wheat Shorts	2267	4036	Livonia	4.0	4.8	14.0	18.3	
Long, John C. Long's Mill, R. F. D. No. 2, Chesterton, Ind. Wheat Middlings	1436	3594	Chesterton	4.0	4.2	14.0	15.9	
Loogootee Flour & Feed Exchange, Loogootee, Ind. Wheat Shorts	637	3337	Loogootee	3.8	4.9	14.0	17.9	
Loughry Bros., Milling & Grain Co., The, Monticello, Ind. Loughry's Wheat Middlings	40	3520	W. LaFayette	4.0	5.4	14.0	19.3	
Lynn Mill & Elevator Co., Lynn, Ind. Wheat Shorts	1936	3393	Lynn	3.5	5.1	13.0	17.6	
Macy Milling Co., Macy, Ind. Wheat Middlings	711	3094	Macy	3.9	3.9	14.1	15.9	
Maginot Bros., Hammond, Ind. Wheat Middlings	2657	3587	Hammond	4.0	4.4	14.0	16.4	
Manja, Charles, Kingsbury, Ind. Mixed Shorts	2341	3675	Kingsbury	2.8	4.3	13.2	14.6	
Martinsville Milling Co., The, Martinsville, Ind. Wheat Shorts	29	3317	Martinsville	4.0	4.7	14.0	19.3	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Wheat Middlings	451	3387	Fort Wayne	4.0	5.0	14.0	17.0	
Means & Witt, Lebanon, Ind. Wheat Shorts	34	3429	Lebanon	4.0	4.1	14.0	19.4	
Middlebury Milling Co., Middlebury, Ind. Wheat Middlings	632	4058	Middlebury	4.0	4.3	14.0	14.0	
Miller & Dohner, Columbia City, Ind. Wheat Middlings	1028	3995	Denver	4.0	3.4	14.0	15.4	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Morgantown Milling Co., Morgantown, Ind.								
Wheat Shorts	1304	3114	Morgantown	3.8	4.9	13.5	15.8	Low grade flour
Wheat Shorts	1304	3117	Mahalaasville	3.9	2.4	13.5	12.1	
Morning Star Mill, Somerville, Ind.								
Middlings	3006	3272	Somerville	3.5	3.6	13.0	16.0	
Moutoux Bros., Evansville, Ind.								
Wheat Shorts	184	3153	Evansville	4.0	5.1	14.0	17.6	
Muller & Sons, Peter, Ferdinand, Ind.								
Wheat Shorts	644	3321	Ferdinand	4.0	4.3	14.0	16.4	
Murray, D. R., Clinton, Ind.								
Wheat Shorts	1843	3720	Clinton	4.0	4.0	14.0	16.4	
Myers & Hartsock, Willmot, Ind.								
Wheat Shorts	1580	4082	Willmot	4.0	4.7	14.0	15.6	
McCoy Bros., Liberty, Ind.								
Wheat Middlings	162	3412	Liberty	3.8	4.1	15.1	18.4	
McKenzie Cereal Food & Milling Co., Quincy, Mich.								
*McKenzie's Pure Wheat Middlings	2822	4006	Middlebury	3.8	5.0	13.0	16.2	Buckwheat bran
*McKenzie's Pure Wheat Middlings	2822	4130	Middlebury	3.8	4.9	13.0	16.1	Ground buckwheat
McNely, Thos. N., Walkerton, Ind.								
Wheat Middlings	1440	3547	Walkerton	4.0	4.4	14.0	14.7	
New Carlisle Milling Co., New Carlisle, Ind.								
Wheat Middlings	1317	3000	New Carlisle	4.0	4.2	14.0	14.0	
New & Cook, Zionsville, Ind.								
*Wheat Shorts	2645	3445	Zionsville	4.0	3.9	14.0	17.2	
Niezer & Co., Monroeville, Ind.								
Wheat Middlings	1508	3927	Monroeville	4.0	4.0	14.0	17.2	
Oaktown Flouring Mill Co., Oaktown, Ind.								
Shorts	1141	3867	Oaktown	4.0	4.3	14.0	16.9	
Paoli Milling Co., The, Paoli, Ind.								
Shorts	627	4049	Paoli	3.0	5.8	12.0	20.0	
Parker City Mills, Parker, Ind.								
Wheat Middlings	1711	3408	Parker	4.0	3.3	14.0	16.1	
Peoples Flouring Mill, The, Ashley, Ind.								
York's Wheat Middlings	2584	4147	Ashley	4.0	4.9	14.0	17.0	
Phoenix Flour Mill, Evansville, Ind.								
Phoenix Wheat Middlings	123	3300	Evansville	4.4	4.9	16.2	16.8	
Pillsbury-Washburn Flour Mills Co., Ltd., Minneapolis, Minn.								
Pillsbury's B. Middlings	2358	3903	Huntington	4.5	5.6	15.0	16.6	
Pillsbury's B. Middlings	2358	3985	Angola	4.5	5.4	15.0	16.5	
Piqua Milling Co., The, Piqua, Ohio.								
Wheat Middlings	2206	3394	Saratoga	4.0	4.6	16.0	15.2	
Platz, D. A., Shipshewana, Ind.								
Wheat Middlings	615	4000	Shipshewana	4.0	3.7	14.0	14.9	Buckwheat product
Wheat Middlings	615	4150	Shipshewana	4.0	3.8	14.0	15.2	Buckwheat product

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Pressel, S. J., Hagerstown, Ind. Pressel's Wheat Middlings	140	3757	Hagerstown	3.7	4.7	14.0	17.8	
Redden & Sons, Wm., New Paris, Ind. Wheat Middlings	2685	3830	New Paris	2.0	4.1	10.0	14.5	
Redington & Morgan, Rolling Prairie, Ind. Wheat Middlings	2068	3090	Rolling Prairie	3.5	4.0	14.0	14.4	
Ridgeville Roller Mill & Elevator, Ridgeville, Ind. Wheat Middlings	1833	3393	Ridgeville	4.0	3.4	14.0	15.9	
Riedel & Gray, Ossian, Ind. Wheat Middlings	2006	4171	Ossian	3.6	3.9	14.0	16.3	
Ripple Milling Co., Mishawaka, Ind. Wheat Middlings	1364	4129	Mishawaka	4.0	5.9	14.0	16.7	
Wheat Middlings	1364	4124	Mishawaka	4.0	4.0	14.0	15.0	
Riverside Mill, The, Wolcottville, Ind. Riverside Mills' Wheat Middlings	1621	4074	Wolcottville	4.0	4.6	14.0	16.1	
Rockport Milling Co., The, Rockport, Ind. Kopp's Wheat Middlings	1200	3361	Rockport	4.0	3.4	14.0	16.0	
Rohm Bros., Rockville, Ind. Shorts	293	3716	Rockville	4.0	3.8	14.0	16.0	
Rohm Bros. & Co., Mansfield, Ind. Shorts	295	3714	Mansfield	4.0	4.5	14.0	17.0	
Rose Milling Co., Alfordsville, Ind. Wheat Middlings	900	3944	Alfordsville	4.0	5.5	14.0	18.8	
Salem Milling Co., Salem, Ind. Wheat Shorts	2456	4139	Salem	3.0	4.9	13.0	16.5	
Salem Farmers Milling Co., Salem, Ind. Wheat Middlings	2308	4142	Salem	4.0	3.1	14.0	15.6	
Sanderson, R. N., Orland, Ind. Wheat Middlings	1735	4016	Orland	4.0	4.0	14.0	15.4	
Schnellville Milling Co., Schnellville, Ind. Schnellville Milling Co.'s Wheat Shorts	965	3509	Schnellville	4.0	5.0	14.0	17.3	
Sims Grain Co., J. T., Frankfort, Ind. Wheat Shorts	1178	3439	Frankfort	4.0	3.9	14.0	16.8	
Wheat Shorts	1178	3835	Thorntown	4.0	4.2	14.0	17.3	
Sloan, J. F., Palestine, Burket P. O., Ind. Sloan's Wheat Middlings	227	4039	Burket	4.0	4.7	14.0	16.7	
Smeltzly, I. Anson, Ontario, Ind. Wheat Middlings	1608	4028	Ontario	4.0	5.3	14.0	15.9	
Smith Grain & Milling Co., Warsaw, Ind. Wheat Middlings	808	4044	Warsaw	3.8	4.3	13.5	15.5	
Smith, Roper & Co., Hobart, Ind. Hobart Wheat Shorts	81	3565	Hobart	4.0	4.8	14.0	18.1	
Smock & Caca, Noblesville, Ind. Shorts	1425	5377	Noblesville	4.0	4.0	14.0	16.8	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Snoddy, M. W., Covington R. F. D. No. 1, Ind. Wheat Middlings	1073 3069	Coal Creek	4.0	4.0	14.0	15.6	
South Side Cereal Mills, Fort Wayne, Ind. South Side Cereal Mills Wheat Middlings	587 3907	Fort Wayne....	4.0	4.1	14.0	15.0	
Southwestern Milling Company, The, Kansas City, Mo. K. C. K. Fancy Middlings.....	1563 3553	Crown Point ..	4.7	5.3	14.5	19.0	
K. C. K. Shorts.....	1564 3554	Crown Point ..	5.2	5.4	15.5	20.0	
Spencer & Co., J. W., Veedersburg, Ind. Wheat Shorts	334 3420	Veedersburg	3.0	4.4	12.0	15.7	
Wheat Shorts	334 3684	Veedersburg	3.0	4.3	12.0	11.6	
St. Anthony Milling Co., St. Anthony, Ind. Wheat Shorts	991 3507	St. Anthony ..	4.0	3.6	14.0	15.0	
Star Milling Co., Shoals, Ind. Star Shorts	503 3940	Shoals	4.0	4.3	14.0	17.0	
Star Mills, C. Cunningham, Prop., Mentone, Ind. Shorts	2763 4103	Mentone	4.0	5.3	14.0	17.5	
Star Roller Mills, The, Burlington, Ind. Wheat Shorts	1238 3339	Burlington	4.0	4.5	14.0	16.6	
Star & Crescent Milling Co., Chicago, Ill. Star Middlings	1329 3631	Wheeler	4.0	4.9	15.0	17.1	
Steckley, George, Kendallville, Ind. Wheat Middlings	1624 4076	Kendallville	4.0	4.9	14.0	19.0	
Stoudt, Thomas, South Bend, Ind. Thos. Stoudt's Wheat Middlings.....	277 3700	South Bend	5.0	5.0	15.4	15.7	
Street Milling Co., J., LaPorte, Ind. Wheat Middlings	761 3682	LaPorte	4.0	5.4	14.0	17.5	
Suckow, Wm., Franklin, Ind. Middlings	14 3111	Franklin	4.0	4.4	14.0	16.3	
Sunlight Milling Co., Mt. Vernon, Ind. Sunlight Milling Co.'s Wheat Middlings	722 3210	Mt. Vernon	4.0	5.4	14.0	17.5	
Thompson, Joseph, Prairie Creek, Ind. Thompson's Wheat Shorts.....	1105 3811	Prairie Creek..	4.5	3.3	14.9	16.7	
Thurgood, Geo. R., Vincennes, Ind. Shorts	1539 3880	Vincennes	4.0	5.1	14.0	17.6	
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Middlings.....	1193 4154	Topeka	4.0	3.7	14.0	14.7	
Tresselt & Sons, C., Fort Wayne, Ind. Wheat Shorts	410 3894	Fort Wayne	4.0	4.1	14.0	16.3	
Wheat Middlings	411 3895	Fort Wayne	4.0	5.7	14.0	17.6	
Valentine & Valentine, Franklin, Ind. Middlings	933 3252	Franklin	4.0	4.5	14.0	18.5	
Valler & Spies Milling Co., St. Louis, Mo. Wheat Middlings	1976 3743	Terre Haute....	4.0	5.6	15.0	17.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection		Guaranteed	Found	Guaranteed	Found	
Victoria Milling Co., Jasper, Ind. Victoria Wheat Shorts.....	796	3305	Jasper.....	4.0	3.9	14.0	17.4	
Viers & Wicks, Rochester, Ind. Viers & Wicks' Wheat Middlings.....	320	3368	Rochester.....	4.0	4.7	14.0	15.1	
Volland Milling Co., The, Ft. Wayne, Ind. Volland's Wheat Middlings.....	259	3609	Ft. Wayne.....	4.0	3.4	14.0	15.9	
Vorhis and Vorhis, Syracuse, Ind. *Shorts.....	2607	3542	Syracuse.....	3.7	4.7	13.8	15.7	
Walker & Co., Peter M., Loogootee, Ind. Wheat Middlings.....	536	3366	Loogootee.....	4.0	3.4	14.3	14.8	
Walker & Norris, Washington, Ind. Wheat Middlings.....	315	3913	Washington.....	5.0	5.7	15.4	18.3	
Wanatah Roller Mills, Wanatah, Ind. Mitzners Middlings.....	1951	3634	Wanatah.....	4.0	3.7	14.0	14.6	
Washburn-Crosby Co., Minneapolis, Minn. Washburn-Crosby Co.'s Flour Middlings.....	734	3574	Whiting.....	5.0	5.1	17.0	19.0	
Washburn-Crosby Co.'s Flour Middlings.....	734	4151	Topeka.....	5.0	6.1	17.0	19.8	
Washburn-Crosby Co.'s Standard Middlings.....	2508	3576	Whiting.....	4.0	5.8	15.0	18.3	
Washburn-Crosby Co.'s Standard Middlings.....	2508	4153	Topeka.....	4.0	5.6	15.0	18.0	
Watson Milling Co., Corydon, Ind. Middlings.....	2662	3496	Corydon.....	4.0	4.3	15.4	16.9	
Weber, Robt., Patoka, Ind. Wheat Shorts.....	1100	3349	Patoka.....	4.0	4.7	14.0	16.8	
Wellington & Son, Anderson, Ind. Wellington's A. X. A. Middlings.....	77	3426	Lebanon.....	4.0	4.9	15.0	18.9	
West Baden Milling Co., West Baden, Ind. Wheat Shorts.....	1011	4063	West Baden.....	4.0	4.1	14.0	16.1	
Western Flour Mill Co., Davenport, Io. Black Hawk Standard Middlings.....	2441	3661	Hillsboro.....	4.7	5.9	16.0	18.4	
Wildcat Roller Mills, Cutler, Ind. Wheat Shorts.....	1091	3340	Cutler.....	4.0	3.7	14.0	16.3	
Williamsport Milling Company, Williamsport, Ind. Middlings.....	2012	3610	Williamsport.....	3.9	4.5	14.1	17.1	
Wilkinson & Co., T. B., Knightstown, Ind. Middlings.....	119	3354	Knightstown.....	3.5	4.1	14.0	18.0	
Yohn and Strombeck, North Webster, Ind. Wheat Shorts.....	2403	4084	North Webster.....	3.5	5.2	13.5	17.3	
WHITE MIDDINGS								
Bridgeton Roller Mills, Bridgeton, Ind. Middlings.....	643	3720	Bridgeton.....	4.0	2.3	14.0	15.1	
Bundy Mill Co., L. L., Vallonia, Ind. Wheat Middlings.....	2479	4164	Vallonia.....	2.9	2.7	13.5	14.8	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Corydon Milling Company, The, Corydon, Ind.								
The White Mill Wheat Middlings.....	99	3498	Corydon	4.0	3.7	14.0	15.3	
Davis & Johnson, Coatsville, Ind.								
Wheat Middlings	438	3302	Coatesville	3.8	2.2	14.4	16.4	
Forrest Park Mills, Terre Haute, Ind.								
Wheat Middlings	1774	3783	Terre Haute...	4.0	2.7	14.0	14.1	
Hawk Bros. Milling Co., Mongo, Ind.								
Middlings	1818	4084	Mongo	3.8	3.3	14.0	13.6	
Moyer, W. H., Cory, Ind.								
*Moyer's Ship	2675	3127	Cory	2.5	2.9	11.5	12.5	
New Milling Co., The, Greenfield, Ind.								
Middlings	1893	3360	Greenfield.....	4.0	2.3	14.0	16.4	
Nugent, Thomas, Jamestown, Ind.								
Wheat Middlings	208	3452	Jamestown	3.9	2.4	14.2	14.6	
Quebbeman & Temple, Ramsey, Ind.								
Shorts	1280	3487	R. R. Ramsey	4.0	2.5	14.0	14.0	
Quickel, R. G., Hagerstown, Ind.								
Quickel's Wheat Middlings.....	2039	3754	Hagerstown ...	2.0	2.8	10.0	15.3	
Red Mill, The, R. R., Fairland, Ind.								
*Wheat Middlings	2602	3289	Fairland	3.0	3.4	13.0	15.4	
Schnellville Milling Co., Schnellville, Ind.								
Schnellville Milling Co.'s Wheat Shorts..	965	3391	Schnellville ...	4.0	3.2	14.0	14.1	
Schultz & Sons, Elberfeld, Ind.								
Middlings	1108	3274	Elberfeld	4.0	3.1	14.0	13.4	
Silver Star Mill, Patricksburg, Ind.								
Shorts	2121	3131	Patricksburg ..	3.5	3.1	13.0	14.1	
St. Anthony Milling Co., St. Anthony, Ind.								
Wheat Shorts	991	3294	St. Anthony ...	4.0	2.5	14.0	13.9	
Thorntown Milling Co., Thorntown, Ind.								
Wheat Middlings	2470	3434	Thorntown.....	3.5	3.3	14.0	15.4	
Tobrocke, Henry, Waymansville, Ind.								
Wheat Shorts	2109	4175	Seymour	2.5	3.0	13.0	15.2	
Union City Milling Co., The, Union City, Ind.								
Wheat Shorts	1706	3389	Union City.....	3.0	3.3	13.1	15.8	
Waltz & Co., J. W., New Palestine, Ind.								
New Palestine Wheat Middlings.....	685	3344	New Palestine..	2.0	1.9	12.0	12.9	
WHEAT MIDDINGS AND SCREENINGS								
Akin-Erskine Milling Co., The, Evansville, Ind.								
Winter Wheat Mixed Feed.....	2297	3197	Evansville	4.0	3.9	15.0	16.1	
Bergenroth Bros., Troy, Ind.								
Wheat Shorts and Screenings.....	2023	3387	Troy	4.0	4.3	14.0	17.0	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Schilt, W. F., Bremen, Ind. Shorts -----	826	3530	Bremen -----	4.0	4.5	14.0	16.5	
WHEAT MIDDINGS AND SWEEPINGS								
Chelsea Mills, Chelsea, Ind. Mixed Feed -----	1208	3480	Chelsea -----	3.7	3.8	14.0	17.0	
Fourteen Mile Valley Mills, R. F. D. No. 2, Lexington, Ind. Mixed Middlings -----	1300	3451	Lexington -----	4.0	3.1	14.0	15.9	
Mixed Germ Middlings -----	1302	3483	Lexington -----	4.0	5.6	14.0	19.7	
MIXED FEED, WHEAT PPRODUCT								
Acme-Evans Co., Indianapolis, Ind. Acme Feed -----	2417	3314	Martinsville ---	4.0	4.4	15.0	17.9	
Acme Feed -----	2417	3333	Thorntown ---	4.0	4.4	15.0	17.6	
Acme Feed -----	2417	3337	Bloomington ---	4.0	4.5	15.0	17.8	
Hoosier Mill Feed -----	2534	3122	Indianapolis ---	4.0	4.5	15.7	16.7	
Hoosier Mill Feed -----	2534	3053	Covington ---	4.0	4.3	15.7	18.7	
Bachman, Valentine, Indianapolis, Ind. Bachman's Cleaned Wheat Product -----	757	3161	Indianapolis --	3.7	3.9	14.0	16.2	
Bachman's Cleaned Wheat Product -----	757	3162	Indianapolis --	3.7	4.9	14.0	16.8	
Barrett Elevator Co., Greenfield, Ind. Mixed Feed -----	2618	3345	Greenfield -----	4.0	3.3	14.0	16.9	
Blanton Milling Co., The, Indianapolis, Ind. Blanton's Mixed Feed -----	46	3193	Indianapolis --	3.7	4.1	15.7	16.1	
Bristow Flouring Mills, Bristow, Ind. Hall's Mixed Feed -----	1859	3334	Bristow -----	3.5	3.4	14.0	16.1	
Brizius Co., The, Chas. W., Evansville, Ind. "Eagle Mixed Feed" -----	2419	3337	Newburgh -----	4.0	4.7	15.1	17.0	
Brose, George, Evansville, Ind. Shipstuff -----	2507	3156	Evansville -----	4.4	4.4	15.6	17.1	
Brose & Arnold, Evansville, Ind. Shipstuff -----	199	3158	Evansville -----	4.0	5.1	14.0	16.3	
Brown, O. L., Campbellsburg, Ind. Mixed Feed -----	1967	3476	Campbellsburg --	3.5	3.2	13.5	16.1	
Mixed Feed -----	1967	4116	Campbellsburg --	3.5	3.9	13.5	17.5	
Bunker Hill Milling Co., Evansville, Ind. Mixed Feed -----	1171	3153	Evansville -----	3.9	4.8	14.0	16.6	
Burkhart, J. E., Georgetown, Ind. Shipstuff -----	975	3438	Georgetown ---	3.8	4.7	14.0	17.0	
Cadick Milling Co., Grandview, Ind. Shipstuff -----	136	3359	Grandview -----	4.0	3.3	14.0	15.2	
Carlisle Mill & Elevator Co., Carlisle, Ind. Ship Stuff -----	791	3233	Carlisle -----	4.5	3.6	14.9	16.0	
Ship Stuff -----	791	3232	Carlisle -----	4.5	4.3	14.9	17.3	
Caula, O. L., Pekin, Ind. Mixed Feed -----	1017	4135	Pekin -----	4.0	3.9	14.0	17.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Mixed Wheat Bran and Wheat Shorts -----	419	3706	Cayuga -----	3.9	4.6	14.0	16.2	
Columbus Milling Co., Columbus, Ind. Mixed Feed -----	653	3103	Columbus -----	3.5	3.8	14.0	14.3	Corn cockle
Crescent Milling Company, Taylorsville, Ind. "Crescent Mill Feed"-----	2105	3104	Taylorsville ---	3.5	4.1	14.0	14.8	
Diamond Roller Mills, Fort Ritner, Ind. Holland's Mixed Feed -----	2308	3949	Fort Ritner ---	3.8	4.3	14.0	13.2	
Doolittle Mills, Doolittle Mills, Ind. Shipstuff -----	2004	3504	Doolittle Mills--	3.5	4.4	14.0	17.5	
Dubois Milling Co., Dubois, Ind. Bran and Shorts-----	1193	3387	Dubois -----	3.6	4.1	13.0	16.0	
Eckert, J. & A., Jasper, Ind. Wheat Bran and Shorts Mixed-----	987	3309	Jasper -----	4.0	4.0	14.0	16.0	
Wheat Bran and Shorts Mixed-----	987	4115	French Lick --	4.0	4.2	14.0	16.5	
Eclipse Mill, The, Ramsey, Ind. Mill Feed -----	2485	3489	Ramsey -----	3.8	3.9	14.0	16.3	
Ewing Mill Co., Ewing, Ind. Ewing Mill Co.'s Mixed Feed-----	2497	4165	Ewing -----	3.8	4.2	14.0	18.3	
Gentryville Roller Mills, Gentryville, Ind. Mixed Feed -----	1840	3385	Gentryville ---	3.2	4.4	14.0	16.9	Corn cockle, chaff, wheat grains
Graft Bros., Winchester, Ind. *Bran and Middlings-----	2529	3406	Winchester ---	4.0	4.3	14.0	17.5	
Greenfield Mills, Greenfield Mills, Ind. Mixed Feed -----	2413	4035	Greenfield ---	4.0	3.8	14.0	14.9	Large amount of corn cockle
Helse Bros. & Co., Orleans, Ind. Shipstuff -----	940	4050	Orleans -----	4.0	5.5	14.0	18.9	
Hendrick & Sons, Tangier, Ind. Wheat Bran and Shorts-----	569	3709	Tangier -----	3.8	3.8	14.0	16.0	
Hibbitts Mill Company, Muncie, Ind. Ship Stuff -----	528	3343	Muncie -----	4.0	4.2	14.0	13.4	
Ingleheart Bros., Evansville, Ind. Mixed Feed -----	649	3179	Evansville ---	4.6	4.4	16.1	16.6	
Jay Grain Co., The Mulberry Branch, Mulberry, Ind. Jay's Wheat Bran and Shorts-----	38	3424	Mulberry -----	4.0	4.1	14.0	16.2	
Karnes, Lubert, Martinsburg, Ind. Red Wing Dairy Feed-----	527	4133	Martinsburg --	3.8	3.9	14.0	16.0	
Kern & Son, A. J., Trinity Springs, Ind. Trinity Brand -----	813	3970	Trinity Springs	3.8	4.2	14.0	13.1	
Kirklin Grain Company, Kirklin, Ind. Bran and Shorts-----	1205	3930	Kirklin -----	3.8	3.9	14.0	17.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Laubscher & Sons, J. W., Highland, (R. F. D. No. 6) Evansville, Ind. Shipstuf-----	798	3179	Highland -----	2.0	4.4	8.0	15.7	
Lingeman & Adams, Brownsburg, Ind. Ship Stuf-----	1500	3455	Brownsburg ----	4.0	5.1	14.0	19.5	
Loogootee Milling Co., Loogootee, Ind. Dairy Mixed Feed-----	1840	3947	Loogootee -----	3.8	4.4	14.0	16.9	
Loving, J. M., Indianapolis, Ind. Mixed Bran and Middlings-----	1541	3240	Indianapolis --	3.8	4.4	14.0	16.0	
Milltown Milling Co., Milltown, Ind. "Milltown Milling Co.'s Millfeed"-----	680	3491	Milltown -----	3.7	4.4	14.0	17.9	
Myers & Bros.' Milling Co., T. C., Epsom, Ind. Ship -----	1846	3991	Epsom -----	4.0	2.6	14.0	14.7	Low grade flour
*Mixed Feed -----	2023	3998	Epsom -----	3.5	3.5	12.5	15.9	
McMurtry & Walther, Marshall, Ind. McMurtry & Walther Wheat Bran and Shorts -----	1671	3706	Marshall -----	3.7	4.4	14.0	17.4	
Nesbit & Co., I. A., Sullivan, Ind. Shipstuf-----	880	3313	Sullivan -----	5.0	3.9	15.4	16.7	
Newberry Milling Co., Newberry, Ind. Mixed Feed -----	1899	4008	Newberry -----	3.5	4.1	12.0	17.5	
Nodine, W. J., Waterloo, Ind. Mixed Feed -----	3771	4023	Jamestown ----	3.0	4.2	13.0	15.9	
Orangeville Flouring Mill, The, Orleans, Ind., R. R. No. 2. Mixed Feed -----	2365	4055	Orangeville ----	4.0	3.6	14.0	17.5	
Otwell Mill Co., Otwell, Ind. Shipstuf-----	1202	3279	Otwell -----	4.0	3.1	14.0	16.7	
Poseyville Milling Co., Poseyville, Ind. Shipstuf-----	1987	3227	Poseyville ----	4.0	4.7	14.0	16.1	
Richland Milling Co., Bloomfield, Ind. Shipstuf-----	1147	4004	Bloomfield ----	4.0	3.3	14.0	14.5	
Schnell, J. H., Birdseye, Ind. Mill Feed -----	963	3200	Birdseye -----	3.7	4.4	14.0	15.7	
Mill Feed -----	963	3501	Birdseye -----	3.7	4.7	14.0	16.8	
Schuppert, M., Depauw, Ind. Depauw Feed -----	1080	3490	Depauw -----	4.0	4.9	15.0	16.9	
Smock & Caca, Noblesville, Ind. Bran and Shorts -----	1424	3376	Noblesville ----	3.8	4.1	14.5	17.7	
Snoddy, M. W., R. F. D. No. 1, Covington, Ind. Bran and Middlings -----	1079	3670	Coal Creek ----	3.5	4.1	14.0	16.4	
Snyder, Chas. A., Waynetown, Ind. Bran and Shorts -----	48	3683	Waynetown ----	3.0	3.9	10.0	16.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Spencer & Co., J. W., Veedersburg, Ind. Mixed Feed	336	3636	Veedersburg	3.0	4.2	12.0	17.0	
Spink Milling Co., The, Washington, Ind. Shipstuff	460	3920	Washington	3.7	4.9	14.0	17.6	
Mixt Feed	461	3921	Washington	3.6	4.7	12.5	17.2	
Spring Mill, Paoli, Ind., R. R. No. 4. Mixed Feed	2266	4095	Paoli	4.0	3.8	14.0	15.4	
Stampers Creek Mill, Paoli, Ind., R. E. No. 2. Mixed Feed	2264	4094	Stampers Creek	3.8	3.1	14.0	15.8	
Steinehlber Milling Co., Hartford City, Ind. Mixed Bran and Middlings	1917	3981	Muncie	4.0	4.0	14.0	17.2	Corn, wheat, oats, corn bran Corn bran
Mixed Bran and Middlings	1917	4012	Hartford City	4.0	4.0	14.0	17.1	
Stepanek, Peter, Modoc, Ind. Stepanek's Wheat Bran and Shorts	130	3400	Modoc	4.0	4.0	16.7	16.8	
Studebaker Mills, Farmland, Ind. Mixed Bran and Middlings	1796	3401	Farmland	3.9	4.1	14.0	18.0	
Tell City Flouring Mills, Tell City, Ind. Shipstuff	2400	3373	Tell City	4.5	4.6	14.7	17.4	
Tunnelton Milling Co., Tunnelton, Ind. Mixed Feed	1557	3948	Tunnelton	3.9	3.8	14.0	17.3	
Valler & Spies Milling Co., St. Louis, Mo. Valler's Mixed Feed	889	3744	Terre Haute	4.0	4.9	15.0	17.0	
Victoria Milling Co., The, Jasper, Ind. Mixed Feed	2608	3477	Jasper	3.5	4.7	14.0	17.5	
Walker & Norris, Washington, Ind. Walker & Norris Wheat Bran and Middlings	318	3915	Washington	4.0	4.0	14.7	16.8	
Winslow Milling Co., Winslow, Ind. Pike's Wheat Bran and Middlings	2355	3277	Winslow	3.2	4.3	14.0	16.2	
Worham & Miller, Pakerton, Ind. Wheat Bran and Wheat Middlings and Wheat Shorts	2457	4036	Pakerton	3.6	3.8	14.0	15.4	
Youngscreek Milling Co., Youngscreek, Ind. Mixed Feed	1909	4120	Youngscreek	3.2	3.0	12.0	16.6	
Zabel and Son, Lanesville, Ind. Zabel and Son's Mill Feed	892	3484	Lanesville	3.8	4.5	14.0	16.3	
Zabel and Son's Mill Feed	892	3485	Lanesville	3.9	4.5	14.0	15.9	
RED DOG FLOUR								
Crawford, J. S., Crown Point, Ind. *Red Dog Flour	2709	3556	Crown Point	2.0	4.9	12.0	17.9	
Raasch, Paul E., Crown Point, Ind. Red Dog Flour	2640	3551	Crown Point	2.0	3.2	12.0	15.0	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Red Dog Flour.....	1406	3327	Valparaiso	2.0	4.1	16.0	16.7	
WHEAT SCREENINGS								
Greenwood Elevator Co., Greenwood, Ind. *Ground Wheat Screenings.....	2599	3384	Greenwood	2.5	3.3	10.0	14.0	
MILL SWEEPINGS								
Volland Milling Co., The, Ft. Wayne, Ind. Mill Sweepings	2135	3908	Fort Wayne	1.0	3.6	1.0	10.9	
MIXED FEED, WHEAT PRODUCT AND SCREENINGS								
Blush Milling Co., Seymour, Ind. Bull's Eye Mixed Feed.....	2179	4168	Seymour	4.5	4.4	16.0	17.4	
Boonville Milling Co., The, Boonville, Ind. "A" Mixed Feed.....	3344	3339	Boonville	3.8	4.1	14.0	15.6	
Emison, J. and S., Vincennes, Ind. Mixed Feed	565	3363	Vincennes	4.0	3.6	14.0	15.8	
Fredericksburg Milling Co., The, Fredericksburg, Ind. Mixed Feed	2281	4064	Fredericksburg	3.9	3.5	14.0	16.7	
Fuhrer-Ford Milling Co., Mt. Vernon, Ind. Mixed Feed	2386	3206	Mt. Vernon	3.9	4.3	14.0	15.3	
Harmon & Wallace, Owensville, Ind. Royal Wheat Feed.....	499	3224	Owensville	3.8	4.1	14.0	17.9	
Harris Milling Co., Greencastle, Ind. Harris' Mixed Feed.....	212	3466	Greencastle	3.5	3.9	14.1	17.8	
Inglefield Milling Co., Inglefield, Ind. Inglefield's Mixed Feed.....	1597	3306	Inglefield	3.7	4.3	14.0	15.3	
Medora Mill Co., Medora, Ind. Medora Mixed Feed.....	526	4163	Medora	3.6	3.7	14.0	17.9	
Moore Milling Co., R. P., Princeton, Ind. The King Mixed Feed.....	3370	3219	Princeton	3.7	4.1	14.0	16.3	
Morning Star Mill, Somerville, Ind. Mixed Feed	2066	3273	Somerville	3.0	4.0	12.0	14.5	
Nashville Roller Mills, Nashville, Ind. *Mixed Feed	2569	3107	Nashville	3.8	3.3	14.0	14.6	
Owensville Milling Co., Owensville, Ind. "Daisy Feed"	3023	3225	Owensville	4.0	4.1	14.0	16.3	
Phoenix Flour Mill, Evansville, Ind. Phoenix "A" Mixed Feed.....	2253	3301	Evansville	4.0	4.7	15.0	15.8	
Princeton Milling Co., Princeton, Ind. Star Brand Mixed Feed.....	1978	3218	Princeton	3.5	4.1	13.0	16.7	
Salem Farmers Milling Co., Salem, Ind. Mixed Feed	2307	4143	Salem	3.8	3.6	14.0	17.4	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Star Mill Co., The, Huntingburg, Ind. Mixed Feed	45	3305	Huntingburg	3.7	4.3	13.7	16.1	
Wallace Milling Co., The, Dale, Ind. Wallace's Mixed Feed	173	3325	Dale	3.9	4.6	14.2	16.8	
Wallace's Mixed Feed	173	3511	Dale	3.9	5.0	14.2	17.4	
Zillak & Schafer Milling Co., The, Haubstadt, Ind. Zillak's Mixed Feed	276	3321	Haubstadt	3.7	4.5	14.0	16.6	
Zillak's Mixed Feed	276	3305	Farmersburg	3.7	4.0	14.0	17.2	
MIXED FEED, WHEAT PRODUCT AND CHAFF								
Friedrich & Son, C. W., Dyer, Ind. *Mixed Feed	2716	3306	Dyer	3.5	4.4	14.0	14.6	
MIXED FEED, WHEAT AND CORN PRODUCT								
Banner Roller Mills, The, Mooresville, Ind. Wheeler's Banner Mixed Feed	437	3313	Mooresville	3.9	4.5	14.0	18.8	
Bloomington Milling Co., The, Bloomington, Ind. Mixed Feed	8	3473	Bloomington	3.0	4.5	13.0	16.2	
Mixed Feed	8	3333	Bloomington	3.0	4.0	13.0	18.5	
Cannelton Flour Mills, The, Cannelton, Ind. Mixed Feed	66	3375	Cannelton	4.1	4.1	13.7	15.8	Cheat, chaff
Mixed Bran	66	3373	Cannelton	3.4	5.8	14.4	15.1	
Cayuga Milling Co., Cayuga, Ind. Cayuga Milling Co.'s Mixed Wheat and Corn Bran and Wheat Shorts	418	3706	Cayuga	4.2	5.2	12.0	13.2	
Clayton Milling Co., Clayton, Ind. Mixed Bran	2526	3398	Clayton	3.7	4.9	14.0	16.3	
Corbin Milling Co., New Harmony, Ind. Corbin's Mixed Feed	313	3223	New Harmony	3.9	4.1	13.3	16.4	
Cunningham, James W., Crothersville, Ind. J. W. Cunningham's Mixed Feed	557	4174	Crothersville	3.0	3.2	10.0	14.8	
Dragoo, B. S. & S. H., Yorktown, Ind. Mixed Corn and Wheat Bran	601	3364	Muncie	3.7	3.9	14.0	17.5	
Enterprise Mill Co., Bicknell, Ind. Wheat Bran and Corn Bran	1188	3373	Bicknell	4.4	4.3	11.0	15.6	
Follet & Co., R. J., Carmel, Ind. Wheat Bran and Corn Bran	1980	3373	Carmel	3.7	4.3	11.0	17.9	
Fowler & Floyd, Harrodsburg, Ind. Fowler & Floyd's Mill Feed	1019	3474	Harrodsburg	4.2	4.4	14.5	17.4	
Fritch, J. D., Frankfort, Ind. J. D. Fritch's Bran Feed	1515	3443	Frankfort	4.0	4.3	13.0	15.9	
Hardin & Son, Ladoga, Ind. Hardin & Sons' Mill Feed	495	3400	Ladoga	3.7	3.8	14.0	17.8	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Harris, J. C., Montgomery, Ind. Mixed Feed	894 3942	Montgomery	3.6	5.0	12.0	16.8	
Hazleton Milling Co., The, Hazleton, Ind. Acme Mixed Bran	773 3246	Hazleton	3.8	4.5	11.7	17.8	
Acme Mixed Bran	773 3365	Hazleton	3.8	5.4	11.7	15.7	
Hubbard & Co., W. H., Monrovia, Ind. Bran	994 3327	Monrovia	4.0	4.5	13.0	15.5	
Huber & Schultz, Poland, Ind. Mixed Feed	866 3123	Poland	4.0	4.5	13.0	13.0	
Hunsicker & Bender, Bluffton, Ind. Mixed Bran	1568 3899	Fort Wayne	4.0	4.1	14.0	15.9	
Mixed Bran	1568 4182	Bluffton	4.0	4.0	14.0	15.6	
Klondike Milling Company, The, Danville, Ind. Mill Run Mixed Feed	2654 3457	Danville	3.5	5.2	13.0	15.4	
LaFayette Milling Co., The, LaFayette, Ind. Mixed Bran	117 3531	LaFayette	4.0	5.5	14.0	16.6	
Lash Flour Mills, Fred B., Farmersburg, Ind. Lash's Mixed Bran	998 3909	Farmersburg	3.7	3.8	11.7	17.8	
Lemon, C. M., Bedford, Ind. Mixed Mill Feed	213 3932	Bedford	4.5	4.5	11.0	17.1	
Linton Mill Co., Linton, Ind. Mixed Feed	1792 3990	Linton	4.0	4.9	13.0	17.5	
Lyons Roller Mills, Lyons, Ind. Mixed Feed	2376 4001	Lyons	3.8	4.1	10.0	17.5	
Marengo Milling Co., The, Marengo, Ind. *Mixed Feed	2680 3492	Marengo	3.7	4.4	13.5	17.4	
Martinsville Milling Co., The, Martins- ville, Ind. Mixed Feed	30 3318	Martinsville	4.0	4.7	12.0	15.7	
Matthews Milling Co., Mitchell, Ind. Matthews Banner Mixed Feed	544 3475	Mitchell	3.8	4.4	12.5	18.5	
Miesenhelder Bros., Sullivan, Ind. Mixed Feed	874 3316	Sullivan	4.1	5.0	10.8	16.6	
Miller & Dohner, Columbia City, Ind. Mixed Bran	2415 3997	Denver	3.5	3.2	14.0	16.1	
Murray, D. B., Clinton, Ind. Mixed Bran	1842 3758	Clinton	3.9	4.7	13.7	13.8	
McBane & Witt, Thorntown, Ind. *Wonder Feed	3766 3832	Thorntown	4.0	3.7	12.0	13.1	Corn silks
McCoy Bros., Liberty, Ind. Mixed Feed	2436 3414	Liberty	3.5	4.1	15.0	17.4	
McCoy & Co., H. W., Lake P. O., Ind. H. W. McCoy & Co.'s Mixed Feed	2223 3336	Lake P. O.	3.9	4.3	13.8	16.7	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Nesbit & Co., I. A., Sullivan, Ind. Mixed Feed -----	938	3815	Sullivan -----	3.9	3.5	16.4	16.7	
Paoli Milling Co., The, Paoli, Ind. Mixed Feed -----	635	4047	Paoli -----	4.0	6.7	8.0	13.8	
Perrysville Flour Mills, Perrysville, Ind. "Victor" -----	3674	3668	Perrysville -----	2.4	4.0	9.0	13.4	
Poseyville Milling Co., Poseyville, Ind. Bran -----	1986	3226	Poseyville -----	3.7	4.3	14.0	14.8	
Ridgeville Roller Mills & Elevator, Ridgeville, Ind. Bran -----	1832	3399	Ridgeville -----	3.8	3.9	13.0	15.0	
Salem Milling Co., Salem, Ind. Mixed Feed -----	2571	4138	Salem -----	3.5	3.3	14.0	16.9	
Schilt, W. F., Bremen, Ind. Bran -----	835	3535	Bremen -----	3.7	4.9	14.0	15.3	
Smith, Elmer E., Knightstown, Ind. Smith's Mixed Feed -----	208	3357	Knightstown --	3.5	4.5	13.0	14.2	
Snyder, Chas. A., Waynetown, Ind. Mix Mill Feed -----	49	3421	Waynetown ---	3.0	3.9	10.0	17.3	
Star Milling Co., Shoals, Ind. Star Mixed Feed -----	504	3941	Shoals -----	3.5	4.0	12.0	17.3	Corn cockle
Switz City Milling Co., Switz City, Ind. Mixed Feed -----	2101	4002	Switz City ---	3.5	4.7	10.0	18.0	
Tell City Flouring Mills, Tell City, Ind. Bran -----	441	3370	Tell City -----	3.8	3.9	14.0	15.6	
Thompson, Joseph, Prairie Creek, Ind. Mixed Wheat and Corn Bran -----	1106	3730	Prairie Creek..	3.1	4.5	14.2	15.7	
Thorntown Milling Co., Thorntown, Ind. Wonder Feed -----	2213	3435	Thorntown ---	4.0	5.4	12.0	12.9	
Waltz & Co., J. W., New Palestine, Ind. New Palestine Mixed Feed -----	686	3345	New Palestine..	3.9	3.9	14.0	15.1	
Weber, Robt., Patoka, Ind. Mixed Feed -----	1101	3249	Patoka -----	3.0	4.4	13.0	13.5	
West Baden Milling Co., West Baden, Ind. Mixed Feed -----	1019	3385	West Baden....	4.3	4.3	16.5	16.9	
West Baden Milling Co., West Baden, Ind. Mixed Feed -----	1019	4054	West Baden....	4.8	4.8	16.5	17.1	
Westphalia Mill & Elevator Co., Westphalia, Ind. Mill Feed -----	226	3970	Westphalia....	3.7	4.9	13.5	17.9	
Wilkinson & Co., T. B., Knightstown, Ind. Mixed Mill Feed -----	121	3352	Knightstown --	3.5	3.9	13.0	17.1	
Williamsport Milling Company, Williamsport, Ind. Mixed Feed -----	2013	3809	Williamsport ..	3.8	5.3	14.0	15.2	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C		Guaranteed	Found	Guaranteed	Found	
MIXED FEED, WHEAT AND CORN PRODUCT AND SCREENINGS								
Baker, E. H., Oakland City, Ind. Mixed Feed -----	2276	3270	Oakland City..	4.0	4.2	14.0	16.2	
Besser, W. T., Greencastle, Ind. Besser Extra Mixed Feed.....	1943	3469	Greencastle ---	3.5	3.6	12.0	16.9	
Bloomfield Milling Co., Bloomfield, Ind. Mixed Mill Feed.....	1864	4003	Bloomfield ----	4.1	4.1	12.8	17.9	
Bundy Milling Co., L. L., Vallonia, Ind. *Mill Feed -----	2821	4165	Vallonia -----	3.4	3.3	13.0	16.1	
Cadick Milling Co., Grandview, Ind. Bran and Screenings.....	2099	3360	Grandview ---	3.8	4.1	14.0	14.4	
Mixed Feed -----	2100	3358	Grandview ---	4.1	4.1	14.0	14.9	
Canine Bros.' Milling Co., Clinton, Ind. Mixed Bran and Shorts.....	1874	3731	Clinton -----	3.8	3.7	13.7	14.9	
Cannelton Flour Mills, The, Cannelton, Ind. Mixed Middlings -----	70	3374	Cannelton ----	4.1	4.5	16.2	17.3	
Cox & Cox, Carthage, Ind. Carthage Mixed Feed.....	291	3355	Carthage -----	3.5	3.6	13.0	16.1	
Croxton & Co., J. W., Cloverdale, Ind. Croxtan's Extra Mixed Feed.....	2632	3464	Cloverdale ----	3.5	4.5	12.0	16.4	
Egloff Sons, A., St. Meinrad, Ind. Bran and Screenings.....	877	3512	St. Meinrad --	4.0	4.0	14.5	15.3	
Bran and Screenings.....	2691	3322	St. Meinrad --	3.0	4.1	14.0	15.4	
Ellettsville Mill Co., The, Ellettsville, Ind. "A" Mixed Feed.....	2180	3470	Ellettsville ---	3.0	3.4	13.0	17.5	
English Milling Co., English, Ind. English Milling Co. Mixed Feed.....	966	3500	English -----	4.0	4.2	14.1	17.0	
Farmers Mill, The, Huntingburg, Ind. Mixed Feed -----	1827	3396	Huntingburg --	3.8	3.8	13.0	16.7	
Fort Branch Milling Co., Fort Branch, Ind. Mixed Feed -----	2165	3222	Fort Branch --	3.7	4.0	14.0	16.9	
Freelandville Flouring Mill Co., Freelandville, Ind. Mixed Feed -----	2691	3872	Freelandville --	4.0	3.3	14.1	16.3	
Freeport Roller Mills, Freeport, Ind. H. Balting's Composition Feed.....	406	3285	Freeport -----	3.8	4.0	14.0	15.4	
Gosport Roller Mills, Gosport, Ind. Mixed Feed -----	1167	3471	Gosport -----	2.6	4.4	9.5	18.0	
Grimes Milling Co., Leavenworth, Ind. Grimes' Mixed Feed.....	2511	3121	Leavenworth --	3.4	3.2	14.5	15.3	
Hartford City Grain & Milling Co., Hartford City, Ind. Cooley's Mixed Feed.....	2371	4034	Hartford City..	3.0	3.7	12.0	15.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Huntington Mill Co., Huntington, Ind. Mixed Feed	499	3798	Huntington	3.8	5.1	13.5	16.3	
Jessup, Nevins & Co., Bloomington, Ind. Bran	1054	3710	Bloomington	3.7	3.6	14.0	16.5	
Millfeed	2354	3719	Bloomington	3.7	3.7	14.0	16.8	
Jessup, Nevins & Co., Kingman, Ind. Millfeed	1056	3417	Kingman	4.0	3.4	14.0	15.5	
Millfeed	1056	3701	Kingman	4.0	3.5	14.0	16.1	
Katterjohn, Q. F., Boonville, Ind. Katterjohn's Mixed Feed	2249	3330	Boonville	4.0	4.1	13.5	16.0	
Klemm, Geo. J., Attica, Ind. Mixed Bran	2516	3636	Attica	3.5	4.1	14.0	16.1	
Mixed Bran	2516	3859	Oxford	3.5	4.3	14.0	16.9	
Mixed Feed	2518	3384	Attica	3.4	4.1	14.0	16.5	
Livonia Flouring Mills, Livonia, Ind. Mixed Feed	2268	4007	Livonia	3.8	3.4	14.0	15.6	
New Milling Co., The, Greenfield, Ind. New Milling Co.'s Mixed Feed	1362	3343	Morristown	3.8	4.1	13.0	16.3	
Mixed Feed	2616	3351	Greenfield	3.8	4.3	14.0	18.1	
Newberry Milling Co., Newberry, Ind. Neff Mill Feed	1898	4007	Newberry	3.0	3.7	9.0	13.1	
Nugent, Thomas, Jamestown, Ind. Nugent's Bran and Shorts and Screenings	1746	3451	Jamestown	3.7	3.7	13.0	17.0	
Nugent's Bran and Screenings	1747	3453	Jamestown	3.7	4.1	13.0	17.7	
Oakland City Roller Mills, Oakland City, Ind. Dairy Mixed Feed	1941	3271	Oakland City	3.0	4.3	12.0	16.6	
Oaktown Flouring Mill Co., Oaktown, Ind. Mill Run	1142	3866	Oaktown	3.5	4.1	13.0	15.9	
Odon Milling Co., The, Odon, Ind. Mixed Feed	1327	3989	Odon	3.5	4.8	10.0	17.1	
Petersburg Milling & Grain Co., Petersburg, Ind. Mixed Feed	1127	3276	Petersburg	3.5	4.2	13.0	17.0	
Mixed Feed	1127	4006	Bloomfield	3.5	4.2	13.0	17.4	
Prange, F., Indianapolis, Ind. Mixed Feed	306	3163	Indianapolis	3.7	4.4	13.5	15.4	
Richland Milling Co., Bloomfield, Ind. Mixed Feed	1148	4006	Bloomfield	3.0	3.5	12.5	15.5	
Rockport Milling Co., The, Rockport, Ind. A. Mixed Feed	2247	3362	Rockport	3.9	4.1	13.3	16.6	
Rohm Bros. & Co., Mansfield, Ind. Mill Feed	294	3713	Mansfield	4.0	3.7	14.0	16.2	
Rohm Bros., Rockville, Ind. Mill Feed	292	3715	Rockville	4.0	4.4	14.0	15.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Star Mills, C. Cunningham, Prop., Mentone, Ind. Mixed Feed	2764	4104	Mentone	3.8	3.8	13.0	15.4	
Suckow, Wm., Franklin, Ind. Mixed Feed	13	3100	Edinburg	4.0	4.3	12.4	12.8	
Mixed Feed	13	3112	Franklin	4.0	4.2	12.4	14.7	
Sullivan Mill & Elevator Co., Sullivan, Ind. *Mixed Feed	2758	3813	Sullivan	3.4	4.7	12.0	16.6	
Tapp & Bridwell, Bloomington, Ind. Mixed Feed	54	3473	Bloomington ..	4.0	3.8	14.0	18.2	
Mixed Feed	54	3836	Bloomington ..	4.0	4.2	14.0	16.9	
Tell City Flouring Mills, Tell City, Ind. Mixed Feed	2356	3371	Tell City	4.0	4.4	14.0	16.3	
Thornburg Milling Company, Martinsville, Ind. Mixed Feed	654	3315	Martinsville ...	3.9	3.5	14.0	15.5	
Thurgood, Geo. R., Vincennes, Ind. Thurgood's Mixed Feed	1806	3881	Vincennes	3.5	4.7	12.0	15.5	
Vorhis and Vorhis, Syracuse, Ind. *Mixed Feed	2696	3541	Syracuse	3.7	4.0	13.5	14.6	
Williams Milling Co., Williams, Ind. Williams Milling Co.'s Mixed Feed	135	3973	Williams	3.9	9.5	13.0	15.6	
Wilson & Greene, Darlington, Ind. *Mixed Feed	2767	3855	Darlington ...	3.5	3.0	13.0	13.9	
MIXED FEED, WHEAT AND RYE PRODUCT								
Koontz, Samuel, Walkerton, Ind. Mixed Bran	1900	3549	Walkerton	2.5	3.9	14.0	14.2	Corn cockle
Roeske Bros., Michigan City, Ind. Wheat and Rye Middlings	1469	3613	Michigan City ..	3.5	3.0	14.0	13.6	
White Bros., LaPorte, Ind. Wheat and Rye Bran	1298	3639	R. R. LaPorte ..	3.5	2.8	14.0	14.1	
RYE PRODUCT								
Friedrich & Son, C. W., Dyer, Ind. *Rye Feed	2715	3608	Dyer	2.0	3.0	12.0	14.9	
BUCKWHEAT BRAN								
Kellman-Kimmet Co., The, Lowell, Ind. Buckwheat Bran	1371	3613	Lowell	3.0	2.4	12.0	9.4	
Loughry Bros. Milling Co., Monticello, Ind. Loughry's Buckwheat Bran	1629	3510	LaFayette	3.0	4.2	12.0	15.8	
Smith, Roper & Co., Hobart, Ind. Buckwheat Bran	1386	3566	Hobart	3.0	4.3	12.0	18.3	
White Bros., LaPorte, Ind. Buckwheat Bran	1295	3641	R. R. LaPorte ..	3.0	5.7	12.0	23.0	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
MIXED FEED, BUCKWHEAT PRODUCT								
Boelter, C. F., Union Mills, Ind. Mixed Buckwheat Bran and Middlings.....	1366	3544	Union Mills ---	4.0	5.3	17.0	21.4	
Friedrich & Son, C. W., Dyer, Ind. *Buckwheat Feed	2713	3607	Dyer	1.7	4.2	7.7	17.6	
Wanatah Roller Mills, Wanatah, Ind. *Buckwheat Bran and Middlings.....	2725	3635	Wanatah	2.5	4.7	10.0	18.3	
CORN BRAN								
Browning Milling Co., W. A., Evansville, Ind. Corn Bran	2163	3175	Evansville ---	4.0	7.3	7.0	9.6	
High Street Mill Co., Muncie, Ind. *Corn Bran	2736	3656	Muncie	5.0	9.0	9.0	10.3	
Home Mill & Grain Co., Mt. Vernon, Ind. *Corn Bran	2598	3207	Mt. Vernon --	5.0	5.4	8.0	9.3	
Jay Grain Co., The, Mulberry Branch, Mulberry, Ind. Jay's Corn Bran.....	37	3425	Mulberry	5.0	9.9	8.0	10.3	
Loughry Bros.' Milling & Grain Co., Monticello, Ind. Loughry's Corn Bran.....	2549	3108	Monticello ---	4.0	7.5	7.0	11.3	
Loughry's Corn Bran.....	2549	3534	LaFayette ---	4.0	7.2	7.0	10.1	
McMurtry, Dooley & Walther, Marshall, Ind. Corn Bran	1082	3707	Marshall	5.0	7.2	8.0	9.9	
Morgantown Milling Co., Morgantown, Ind. Corn Bran	1305	3115	Morgantown ---	4.8	11.1	8.0	11.1	
Spink Milling Co., The, Washington, Ind. Corn Bran	2437	3322	Washington ---	5.0	9.0	8.0	10.7	
Walker & Norris, Washington, Ind. Corn Bran	315	3912	Washington ---	5.8	3.7	9.0	5.8	
HOMINY FEED, MEAL OR CHOP								
American Hominy Co., Indianapolis, Ind. Homco	716	3254	Franklin	7.7	8.5	8.5	12.8	
Homco	716	3263	Rochester	7.7	9.1	8.5	10.6	
Homco	716	3264	S. E. Rochester	7.7	9.1	8.5	10.6	
Homco	716	3304	Clayton	7.7	7.8	8.5	12.6	
Homco	716	3413	Kingman	7.7	9.3	8.5	10.7	
Homco	716	3722	Rockville	7.7	7.3	8.5	10.3	
Eberts & Bro., North Vernon, Ind. Eberts Hominy Feed.....	2544	3351	Bedford	8.0	10.0	11.0	10.8	
Emison & Co., J. & S., (Baltic Mills) Vincennes, Ind. Hominy Feed	325	3310	Farmersburg --	9.2	8.4	11.6	10.2	
Hominy Feed	326	4184	Paoli.....	9.2	8.9	11.6	10.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official Inspection C.		Guaranteed	Found	Guaranteed	Found	
Evans Milling Co., The, Indianapolis, Ind.							
Hominy Feed	20 3109	Bargersville.....	7.5	9.6	10.0	10.9	
Hominy Feed	20 3262	Indianapolis ..	7.5	10.0	10.0	10.6	
Ewing Mill Co., The, Brownstown, Ind.							
Hominy Meal	200 4187	Ewing	7.5	9.5	9.0	10.5	
Henry Company, The, Terre Haute, Ind.							
Henry's Hominy Feed	2000 3785	Terre Haute ..	8.0	6.3	10.0	8.6	
Hodapp Hominy Company, Seymour, Ind.							
Hominy Feed	200 3102	Edinburg	5.0	8.0	8.0	10.1	
Hodapp Hominy Feed	2042 4176	Seymour	7.5	8.9	10.0	10.0	
Hunter Bros.' Milling Co., St. Louis, Mo.							
"Hominy Feed"	300 4144	Salem	7.0	9.5	9.5	10.8	
Kell, C. H., Indianapolis, Ind.							
Hominy Feed	1794 3256	Indianapolis ..	7.5	6.9	10.0	9.0	
Kidder & Co., F. L., Paris, Ill.							
Peerless Hominy Feed.....	2449 3463	Cloverdale	7.5	6.8	8.5	8.9	
LaFayette Hominy Mill Co., The, LaFayette, Ind.							
Hominy Feed	9 3726	LaFayette	8.4	8.4	9.5	10.6	
Loving, J. M., Indianapolis, Ind.							
Hominy Meal	1540 3341	Indianapolis ..	7.5	7.7	8.0	9.9	
Suffern, Hunt & Co., Decatur, Ill.							
Acme Hominy Feed	2464 3437	Whitestown	7.1	9.0	9.3	10.9	
Acme Hominy Feed	2464 4137	Salem	7.1	8.9	9.3	10.4	
GLUTEN FEED							
Clinton Sugar Refining Co., Clinton, Ia.							
Clinton Gluten Feed	2108 3097	South Bend.....	3.0	5.3	23.0	22.7	
Corn Products Refining Co., Chicago, Ill.							
Buffalo Gluten Feed	2159 3538	Nappanee	2.5	2.3	23.0	27.1	
Buffalo Gluten Feed	2159 4060	Kendallville	2.5	3.5	23.0	27.3	
Buffalo Gluten Feed	2510 3558	Crown Point	2.5	2.1	24.0	27.0	
Douglas & Co., Cedar Rapids, Ia.							
Cedar Rapids Gluten Feed.....	2300 3620	Schererville	4.0	7.4	23.0	20.7	
Union Starch & Refining Co., Edinburg, Ind.							
Union Gluten Feed.....	559 3251	Edinburg	3.0	4.5	24.0	23.7	
CORN GERM MEAL							
American Hominy Co., Indianapolis, Ind.							
Homocolline Feed	2401 3397	Clayton	6.5	8.0	16.0	17.6	
Union Starch & Refining Co., Edinburg, Ind.							
Union Corn Germ Meal.....	2237 3260	Edinburg	8.0	15.9	18.0	20.8	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
CORN AND OATS FEED								
Bash & Co., C. E., Huntington, Ind. C. E. Bash & Co.'s Chop.....	1749	3791	Huntington	3.9	4.0	9.5	10.3	
Beck, Delbert F., Burlington, Ind. Beck's Chop Feed.....	1309	3343	Burlington	3.9	4.0	9.5	9.7	
Belt Elevator & Feed Co., Indianapolis, Ind. Corn and Oats Chop.....	2116	3191	Indianapolis	3.9	4.0	9.5	9.3	
Bleker Bros., Hammond, Ind. Corn and Oats Chop.....	1340	3509	Hammond	3.0	4.6	9.0	9.7	
Blayne, C. F., Angola, Ind. Corn and Oats Chop.....	1641	3983	Angola	3.9	4.3	9.5	10.0	
Bock, Leonard, Argos, Ind. Chop Feed	549	4158	Argos	3.9	4.5	9.5	9.5	
Brudl & Co., Jos., New Haven, Ind. Corn and Oat Chop Feed.....	566	3933	New Haven	3.9	4.0	9.5	8.6	
Buck, F. P., Pleasant Lake, Ind. Buck's Chop Feed	1138	4020	Pleasant Lake	3.9	4.1	9.5	9.9	
City Mills, Huntington, Ind. City Mills Chop Feed.....	1812	3793	Huntington	3.9	5.0	9.5	10.0	
Crabbs-Reynolds-Taylor Co., LaFayette, Ind. Corn and Oats Ground.....	796	3526	LaFayette	3.9	4.4	9.5	9.0	
Crawford, J. S., Crown Point, Ind. Corn and Oats Chop.....	2041	3557	Crown Point	3.5	4.5	9.0	11.3	
Cullom & Son, W. H., Frankfort, Ind. Corn and Oats Chop.....	1514	3447	Frankfort	3.9	4.2	9.0	9.6	
Dague & Company, M. L., Muncie, Ind. Dague & Company's Chop Feed.....	1032	3980	Muncie	3.9	4.1	9.5	8.9	
Darlington Grist Mill, Darlington, Ind. Chop Feed	2361	3850	Darlington	3.9	4.2	9.5	10.8	
DeBaum Mill, The, Terre Haute, Ind. Chop Feed	1004	3700	Terre Haute	3.9	4.6	9.5	9.4	
Delp, Ettinger & Co., Bourbon, Ind. Bourbon Chop	2425	3624	Valparaiso	3.9	4.2	9.5	9.4	Buckwheat hulls
Bourbon Chop	2425	4014	Valparaiso	3.9	5.4	9.5	11.6	
Elnora Milling Co., The, Elnora, Ind. Chop Feed	389	3974	Elnora	3.0	3.8	8.0	10.1	
Fowler, A., Pittsboro, Ind. Corn and Oats Chop.....	2648	3456	Pittsboro	3.5	4.0	9.0	10.5	
Fritch, J. D., Frankfort, Ind. Fritch's Corn and Oat Chop.....	310	3441	Frankfort	3.5	3.9	9.5	10.0	
Gandy & Co., O., South Whitley, Ind. Corn and Oats Chop	1476	3996	Denver	3.5	4.3	9.0	10.4	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Glen Echo Mills, Indianapolis, Ind. Bower's Chop	1086	3234	Indianapolis ..	3.5	4.4	8.0	8.7	
Globe Mills, The, Fort Wayne, Ind. The Globe Mills Corn and Oats Chop.....	427	3304	Fort Wayne ..	3.9	6.7	9.5	11.0	
Goshen Milling Company, The, Goshen, Ind. Chop Feed	67	3823	Goshen	3.2	3.9	10.5	10.0	
Chop Feed	67	3824	Goshen	3.2	4.2	10.5	11.0	
Gottio, O. W., Michigan City, Ind. Corn and Oats Chop	1284	3638	Michigan City..	3.5	4.6	9.0	9.9	
Graft Bros., Winchester, Ind. Graft Bros. Chop Feed	1183	3404	Winchester ..	3.9	3.4	9.5	10.2	
Gray & Whitestine, Huntington, Ind. Gray & Whitestine's Chop.....	1034	3796	Huntington.....	3.9	3.8	9.5	9.8	
Gregory, Franklin S., Washington, Ind. Oats and Corn Chop.....	876	3516	Washington ...	3.9	4.3	9.5	11.2	
Hawkins Bros., Oxford, Ind. Elevator Chop Feed	1906	3857	Oxford	3.9	4.7	9.0	10.5	
Heltschmidt, August C., Michigan City, Ind. Heltschmidt's Chop Feed.....	1719	3657	Michigan City..	4.2	3.6	9.0	8.6	
Hibbits Mill Company, Muncie, Ind. Corn and Oat Chop.....	530	3850	Muncie	3.9	4.7	9.5	10.4	
High Street Milling Co., Muncie, Ind. High Street Milling Company's Chop Feed	978	3960	Muncie	3.9	5.2	9.5	9.9	
Hill, Thomas J., South Bend, Ind. Thos. J. Hill's Corn and Oats Chop.....	979	3698	South Bend.....	3.0	4.3	9.0	10.1	
Holser & Co., B. I., Walkerton, Ind. Corn and Oats Chop.....	1452	3550	Walkerton	3.9	4.2	9.0	10.6	
Hostetter, J. A., Peru, Ind. XXXX Chop Feed	2471	3778	Peru	2.5	4.2	7.5	9.5	
Humphreys Feed Mill, Pierceton, Ind. Chop Feed	2151	4083	Pierceton	3.5	3.0	9.5	11.0	
Jones Bros., Attica, Ind. *Corn and Oats Chop.....	2621	3382	Attica	3.9	2.7	9.5	9.5	
Kellman Kimmel Co., The, Lowell, Ind. Corn and Oats Chop.....	1374	3616	Lowell	3.5	5.0	9.0	10.7	
Kriwitz Bros., Kendallville, Ind. Kriwitz Bros. Chop Feed.....	1042	4069	Kendallville ...	3.8	4.5	9.4	10.6	
Kuhn & Co., John H., Michigan City, Ind. Corn and Oat Chop.....	1642	3647	Michigan City..	3.9	4.2	9.5	10.7	
Lemon, C. M., Bedford, Ind. Corn and Oats Chop.....	214	3953	Bedford	4.0	4.4	8.5	10.2	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Ligonier Milling Co., Ligonier, Ind. Ligonier's Milling Co.'s Corn and Oats Chop	378	4087	Ligonier	3.9	4.3	9.5	10.7	
Linton Mill Co., The, Linton, Ind. Corn and Oat Chop	506	4009	Linton	3.9	4.9	9.5	9.0	
Little Crow Milling Co., Warsaw, Ind. Little Crow Chop Feed	369	4042	Warsaw	3.9	4.6	9.5	10.0	
Lorig, Theodore, LaPorte, Ind. Chop Feed	785	3677	LaPorte	3.9	4.9	9.5	10.4	
Lynn Elevator & Coal Co., The, Lynn, Ind. Corn and Oats Chop	1716	3397	Lynn	3.9	3.0	9.5	10.7	
Maginot Bros., Hammond, Ind. Corn and Oats Chop	2656	3586	Hammond	3.5	5.0	9.0	9.7	
Martin Produce Co., West LaFayette, Ind. Ground Corn and Oats	447	3522	W. LaFayette	3.0	4.5	9.0	10.3	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Chop Feed	449	3889	Fort Wayne	3.9	5.9	9.5	10.4	
Mead Grain Co., Union City, Ind. Corn and Oats Chop	787	3390	Union City	3.0	3.0	9.0	9.5	
Means & Witt, Lebanon, Ind. Corn and Oats Chop	83	3428	Lebanon	3.9	3.9	9.5	10.3	
Middlebury Milling Co., Middlebury, Ind. Corn and Oat Chop	633	4059	Middlebury	4.2	5.4	10.5	9.9	
Miller, Wesley, South Bend, Ind. Oats and Corn Chop	924	3692	South Bend	3.8	4.4	9.6	9.9	
Moon, Grant, Denver, Ind. *Corn and Oats Chop	2759	3774	Denver	3.5	3.9	9.0	10.7	
Morrison, Finch & Co., Hillsboro, Ind. Mixed Feed	1139	3663	Hillsboro	3.0	3.3	9.0	10.3	
Nappanee Produce Co., Nappanee, Ind. Nappanee Produce Co.'s Chop Feed	1058	3537	Nappanee	3.9	4.5	9.5	10.9	
New & Cook, Zionsville, Ind. *Corn and Oats Chop	2646	3444	Zionsville	3.5	3.9	9.0	10.3	
New Carlisle Milling Co., New Carlisle, Ind. Corn and Oats Chop	1315	3658	New Carlisle	3.9	5.4	9.0	11.3	
Nichols & Co., C. E., Lowell, Ind. Corn and Oats Chop	1528	3617	Lowell	3.5	4.9	9.0	10.1	
Nicholson, E. J., Ross, Ind. Corn and Oats Chop	1554	3600	Ross	3.5	4.1	9.0	10.2	
Niezer & Co., Monroeville, Ind. Corn and Oats Chop	1501	3925	Monroeville	3.5	4.7	9.0	9.9	
Noftager, Benjamin, Rochester, Ind. Corn and Oats Chop	2051	3265	Rochester	3.5	3.6	9.0	11.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Inspection C.	Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Owens & Son, J. W., Saratoga, Ind. Corn and Oats Chop.....	1864 3306	Saratoga.....	3.9	3.8	9.5	9.7	
Pennsylvania Elevator & Supply Co., In- dianapolis, Ind. Corn and Oat Chop.....	1648 3258	Indianapolis ...	3.9	3.5	9.5	7.9	
Pierce Elevator Co., Union City, Ind. Pierce's Corn and Oats Chop.....	309 3306	Harrisville.....	3.8	3.0	9.4	10.2	
Pittman, H. E., Bedford, Ind. Chop Feed	337 3950	Bedford.....	3.2	4.9	8.8	9.5	
Redington & Morgan, Rolling Prairie, Ind. Corn and Oats Chop.....	1279 3689	Rolling Prairie..	3.9	4.5	9.0	9.9	
Reed & Son, Isaac, Argos, Ind. *Corn and Oats Chop.....	2883 4161	Argos.....	3.5	4.4	9.0	10.1	
Ridgeville Roller Mills & Elevator, Ridge- ville, Ind. Corn and Oats Chop.....	1881 3391	Ridgeville	3.9	3.6	9.5	10.4	
Rochester Roller Mills, Rochester, Ind. Corn and Oats Chop.....	1861 3267	Rochester	3.9	3.1	9.5	10.4	
Roeske Bros., Michigan City, Ind. Corn and Oats Chop.....	1469 3644	Michigan City ..	3.8	4.0	9.5	10.1	
Sims Grain Co., J. T., Frankfort, Ind. Corn and Oats Chop.....	1180 3438	Frankfort	3.9	3.9	9.5	11.0	
Smith, Elmer B., Knightstown, Ind. Smith's Corn and Oats Feed.....	201 3356	Knightstown....	3.2	3.6	9.0	9.4	
Smith Grain & Milling Co., Warsaw, Ind. Corn and Oat Chop.....	802 4127	Warsaw	3.7	3.9	9.5	10.0	
Stall & Co., R. S., Thorntown, Ind. Corn and Oat Chop.....	768 3432	Thorntown	3.9	3.7	9.5	9.9	
Steckley, George, Kendallville, Ind. Chop Feed	405 4072	Kendallville ...	4.0	4.4	10.0	10.4	
Street Milling Co., J., LaPorte, Ind. Corn and Oats Chop Feed.....	760 3562	Gary	3.9	4.3	9.5	10.0	
Corn and Oats Chop Feed.....	760 3680	LaPorte	3.9	4.4	9.5	10.2	
Thompson, James, LaFayette, Ind. Mixed and Ground Corn and Oats.....	198 3524	LaFayette.....	3.0	4.3	9.0	9.0	
Thorntown Milling Co., Thorntown, Ind. Witts Chop Feed.....	2211 3435	Thorntown	3.8	3.8	9.5	9.9	
Timbrook, H. W., Ossian, Ind. Timbrook's Chop	431 4172	Ossian	3.0	4.0	10.1	9.3	
Topeka Milling Co., Topeka, Ind. Topeka Milling Co.'s Chop Feed.....	1194 4155	Topeka	3.9	3.8	9.5	10.0	
Tresselt & Sons, C., Fort Wayne, Ind. Chop Feed	408 3303	Fort Wayne....	3.9	5.5	9.5	10.0	
Troup, Irvin, Milford, Ind. *Chop Feed	2817 4121	Milford	3.5	4.1	9.0	10.0	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Corn and Oats Chop.....	1403	3622	Valparaiso.....	3.5	4.0	9.0	10.0	
Viers & Wicks, Rochester, Ind. Viers & Wicks' Chop Feed.....	321	3336	Rochester.....	4.0	4.3	10.0	10.0	
Vorhis and Vorhis, Syracuse, Ind. *Chop Feed.....	2098	3543	Syracuse.....	3.5	4.4	9.0	10.8	
Way, C. B., LaPorte, Ind. Way's Corn and Oats Chop.....	2131	3973	LaPorte.....	3.5	4.4	9.5	9.7	
White Bros., LaPorte, Ind. Corn and Oats Chop.....	1294	3640	R. R. LaPorte	3.9	4.3	9.5	10.2	
Williams, Thomas L., Muncie, Ind. Williams Chop Feed.....	943	3979	Muncie.....	3.9	3.9	9.5	10.0	
Witt, J. W., Lebanon, Ind. Corn and Oats Chop.....	667	3431	Lebanon.....	3.9	3.7	9.5	9.9	
CORN, OATS AND WHEAT								
Allan, J. P., Farmersburg, Ind. Allan's Mixed Feed.....	1163	3308	Farmersburg...	3.2	6.5	9.0	13.5	Wheat bran, middlings, hominy feed
CORN, OATS AND RYE								
Bluffton Milling Co., Bluffton, Ind. Corn Oats and Rye Chop.....	662	4180	Bluffton.....	3.2	4.0	11.5	9.5	
Hermann, S. C., Muncie, Ind. "Hermann's Chop Feed".....	506	3967	Muncie.....	3.5	3.2	9.5	10.5	
Peoples' Flouring Mills, Ashley, Ind. Huber's Chop Feed.....	1218	4145	Ashley.....	3.9	4.6	9.5	10.5	
Schroeder, E. F., Crown Point, Ind. Ground Feed.....	2113	3555	Crown Point...	3.3	4.4	12.0	10.7	
Slack, E. B., Muncie, Ind. Slack's Chop Feed.....	811	3978	Muncie.....	3.5	3.6	9.5	9.5	
Wolcottville Elevator Co., Wolcottville, Ind. Chop Feed.....	2277	4077	Wolcottville...	3.0	4.3	9.5	10.4	
CORN, OATS, RYE AND BARLEY								
Hunsicker & Bender, Bluffton, Ind. Chop Feed.....	452	4189	Bluffton.....	2.0*	4.4	8.0	9.5	
CORN, OATS AND CORN BRAN								
Barrett Elevator Co., Greenfield, Ind. Chop Feed.....	2347	3348	Greenfield.....	3.9	5.6	9.0	10.0	
Fyke Milling Co., LaGrange, Ind. Fyke's Chop Feed.....	2134	4031	LaGrange.....	3.5	4.0	9.5	9.9	
Harris Milling Co., Greencastle, Ind. Harris' Chop Feed.....	210	3469	Greencastle...	4.1	5.8	10.3	10.3	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Knoblock & Ginz Milling Co., South Bend, Ind.								
*A. Corn and Oats Chop.....	2738	3304	South Bend.....	3.9	4.3	9.5	9.6	
*A. Corn and Oats Chop.....	2738	3306	South Bend.....	3.9	4.4	9.5	9.3	Buckwheat hulls
Ogden, Geo. R., Milford, Ind.								
Corn and Oats Chop.....	1575	4126	Milford.....	3.8	4.1	9.0	10.5	
Oxford Feed Mill, Oxford, Ind.								
Deed's Chop Feed.....	249	3856	Oxford.....	3.9	4.8	9.5	8.6	
Volland Milling Co., The, Ft. Wayne, Ind.								
Volland's Chop Feed.....	809	3911	Fort Wayne.....	3.9	4.4	8.0	9.7	
CORN, OATS, WHEAT AND CORN BRAN								
Holdaway & Co., W. L., Terre Haute, Ind.								
Holdaway's Horse Feed.....	2193	3763	Terre Haute.....	3.9	5.3	9.0	9.2	
Leach & Co., E. R., Sullivan, Ind.								
Chop Feed.....	1155	3880	Sullivan.....	4.3	4.2	10.3	10.6	
Loogootee Milling Co., Loogootee, Ind.								
Mixed Feed.....	1839	3946	Loogootee.....	3.5	4.9	10.0	10.6	
CORN, OATS, WHEAT BRAN AND SCREENINGS								
Coal City Milling Co., Coal City, Ind.								
Coal City Milling Co.'s Chop Feed.....	2438	3124	Clay City.....	3.0	3.8	12.0	8.4	
Coal City Milling Co.'s Chop Feed.....	2438	3126	Brazil.....	3.0	4.3	12.0	8.2	
CORN, OATS AND WHEAT SCREENINGS								
Kinsey Bros., Mentone, Ind.								
Corn and Oats Chop.....	1996	4102	Mentone.....	3.5	4.2	9.5	10.9	
CORN, OATS, WHEAT AND WHEAT SCREENINGS								
Phillips & Ross Grain Co., Rosedale, Ind.								
Mill Feed.....	1883	3731	Rosedale.....	3.9	3.4	9.5	11.4	
CORN, OATS, RYE AND WHEAT SCREENINGS								
Goodrich Bros.' Hay & Grain Co., Winchester, Ind.								
"Climax Chop".....	2358	3409	Winchester.....	3.5	3.6	9.5	10.9	
Parker City Mills, Parker, Ind.								
Star Mixed Feed.....	2370	3409	Parker.....	2.5	2.5	9.0	10.9	
CORN, OATS, RYE, BARLEY AND WHEAT SCREENINGS								
Nordine, W. J., Waterloo, Ind.								
Chop Feed.....	2772	4022	Jamestown.....	2.4	3.1	8.3	11.0	
CORN, OATS, CORN BRAN AND WHEAT SCREENINGS								
Akron Milling Co., The, Akron, Ind.								
*Akron Chop.....	3794	4101	Akron.....	3.5	4.6	9.0	11.1	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Spencer & Co., J. W., Veedersburg, Ind. Chop Feed	330	3035	Veedersburg	3.0	4.0	8.0	10.1	
CORN, OATS, WHEAT, CORN BRAN AND WHEAT SCREENINGS								
Bridgeton Roller Mills, Bridgeton, Ind. Mixed Feed	1210	3718	Bridgeton	4.0	4.1	9.8	10.3	
CORN, CORN BRAN AND WHEAT SCREENINGS								
Hughes Lumber & Grain Co., Brooklyn, Ind. *Chop Feed	2606	3312	Brooklyn	2.5	3.0	9.0	12.0	
CORN AND WHEAT BRAN								
Elnora Milling Co., The, Elnora, Ind. Mixed Feed	391	3975	Elnora	3.0	3.9	10.0	14.0	
CORN, WHEAT BRAN AND CORN BRAN								
Forrest Park Mills, Terre Haute, Ind. Mixed Feed	1775	3734	Terre Haute....	4.0	3.5	9.8	16.1	
CORN SIFTINGS, OATS, RYE AND WHEAT SCREENINGS								
Murray, David R., Clinton, Ind. Mixed Feed	1084	3759	Clinton	3.5	2.6	11.0	12.3	
CORN, OATS, WHEAT, OAT HULLS, CORN BRAN AND WHEAT SCREENINGS								
Union Grain & Coal Co., The, Anderson, Ind. "Union" Mixed Feed.....	1646	3065	Muncie	3.0	4.0	10.0	10.7	
CORN, OATS, WHEAT BRAN, MID- LINGS, SCREENINGS AND CORN BRAN								
Moyer, W. H., Cory, Ind. W. H. Moyer's Mixed Chop.....	1150	3128	Cory	3.0	3.8	12.0	11.8	
W. H. Moyer's Mixed Chop.....	1150	3780	Terre Haute....	3.0	3.4	12.0	14.3	
OATS, WHEAT, HOMINY MEAL AND CORN BRAN								
E. E. Dix, Terre Haute, Ind. Dix's Chop Feed.....	2223	3741	Terre Haute....	3.9	3.9	9.0	9.3	
HOMINY FEED, LIGHT OATS AND OAT HULLS								
Martin & Co., T. C., LaFayette, Ind. Corn and Oat Hull Chop.....	590	3633	LaFayette	3.1	4.3	8.2	9.9	
CORN AND COB MEAL AND OATS.								
Brown, W. W., Goshen, Ind. Favorite Feed	2600	3331	Goshen	3.5	3.6	8.0	8.6	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number Official Inspection Certificate	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Friedrich & Son, C. W., Dyer, Ind. *Friedrich's Chop Feed.....	2714 3006	Dyer -----	3.0	4.1	9.0	9.1	
Ripple Milling Co., Mishawaka, Ind. *Chop Feed	2800 4122	Mishawaka ----	3.3	3.3	8.0	9.4	
Smeltzly, I. Anson, Ontario, Ind. Corn and Oat Chop.....	1607 4027	Ontario -----	3.5	4.2	8.5	9.9	
CORN AND COB MEAL, OATS AND WHEAT PRODUCT							
Walker & Co., Peter M., Loogootee, Ind. Mixed Feed	537 3324	Loogootee ----	3.7	4.8	13.5	11.7	
CORN AND COB MEAL AND WHEAT PRODUCT							
Enterprise Feed Mill, Princeton, Ind. Mixed Feed	1942 3220	Princeton ----	3.0	3.7	11.0	12.0	
Gregory Feed Mill, Franklin S., Washington, Ind. Mixed Feed	2175 3517	Washington ---	2.8	3.4	8.0	11.3	
CORN, OATS AND CORN SCREENINGS							
Canal Elevator Co., Peru, Ind. Chop Feed	886 3777	Peru -----	3.2	3.7	8.8	12.3	
CORN BRAN AND CORN SCREENINGS							
Mornings Star Mill, Evansville, Ind. Corn Bran and Mill Run.....	2167 3208	Evansville ----	3.0	6.9	8.0	8.8	
LINSEED MEAL							
American Linseed Co., New York, N. Y. "Wright & Hills" Linseed Meal.....	819 3618	Lowell -----	6.0	7.9	32.0	35.8	
"American Linseed Co." Linseed Meal.....	820 3772	Huntington ---	6.0	6.3	32.0	37.4	
Brown Oil Co., Robert B., St. Louis, Mo. Pure Old Process Linseed Meal.....	2168 3747	Terre Haute---	9.0	8.1	34.0	35.6	
Chicago White Lead & Oil Co., The, Chicago, Ill. "The King" Ground Linseed Oil Cake.....	572 3599	Schererville ---	6.0	9.0	32.0	35.3	
Crabbs Reynolds Taylor Co., LaFayette, Ind. Linseed Meal	2330 3528	LaFayette ----	6.0	11.6	32.0	33.2	
Evans Linseed Oil Co., Indianapolis, Ind. Linseed Oil Meal.....	773 3118	Franklin -----	6.0	7.5	32.0	36.4	
Linseed Oil Meal.....	773 3261	Indianapolis ---	6.0	6.6	32.0	33.1	
Hirst & Begley Linseed Co., Chicago, Ill. Hirst & Begley Linseed Co.'s Ground Linseed Cake	2418 3310	Mooresville ---	8.0	9.6	34.0	33.6	
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Oil Meal.....	448 3775	Denver -----	8.0	8.8	30.0	31.5	
Mayflower Mills Oil Meal.....	448 3800	Fort Wayne ---	8.0	9.8	30.0	27.7	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Official Inspection C.	Sample taken at	Crude Fat percent		Crude Protein percent		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Midland Linseed Company, Minneapolis, Minn.							
Old Process Ground Linseed Cake.....	663 3339	Indianapolis ---	6.0	8.5	32.0	36.0	
Old Process Ground Linseed Cake.....	663 3965	Attica ---	6.0	8.1	32.0	37.0	
Old Process Ground Linseed Cake.....	663 3334	Thorntown ---	6.0	7.9	32.0	36.5	
Old Process Ground Linseed Cake.....	663 4078	Kendallville ---	6.0	8.2	32.0	37.1	
O'Brien Varnish Co., The, South Bend, Ind.							
Screw Press Old Process Linseed Oil Meal.....							
Screw Press Old Process Linseed Oil Meal.....	2443 3558	Walkerton ---	6.0	9.4	30.0	33.8	
Screw Press Old Process Linseed Oil Meal.....	2443 3086	Angola ---	6.0	8.2	30.0	35.8	
Sherwin-Williams Co., The, Cleveland, O.							
 Linseed Meal.....	1723 3061	Muncie ---	6.0	10.8	38.0	34.8	
GROUND FLAXSEED CAKE							
(Low Grade Meal)							
Laxo-Cake-Meal Co., The, Chicago, Ill.							
Laxo-Cake-Meal.....	2148 3139	Evansville ---	8.0	8.7	25.0	26.4	
Laxo-Cake-Meal.....	2148 3238	Indianapolis ---	8.0	8.1	25.0	26.5	
Laxo-Cake-Meal.....	2148 3782	Riley ---	8.0	9.1	25.0	26.6	
FLAX SCREENINGS							
Lull & Co., Chas. R., Milwaukee, Wis.							
Ground Flax Flakes.....	2677 4140	Salem ---	10.0	9.5	14.0	14.3	
COTTONSEED MEAL							
American Cotton Oil Company, The, New York, N. Y.							
Choice Cotton Seed Meal.....	1335 3727	W. LaFayette..	9.0	8.9	41.0	40.7	
Bartlett Company, J. E., Jackson, Mich.							
"Farmer Brand" Fancy Choice Cotton-seed Meal.....	2780 4067	Middlebury ---	9.0	7.1	41.0	41.1	
Brode & Co., F. W., Memphis, Tenn.							
Owl Brand Cotton Seed Meal.....	1769 3311	Mooreville ---	7.0	8.1	41.0	41.4	
Owl Brand Cotton-Seed Meal.....	1769 3619	Crown Point---	7.0	8.0	41.0	39.7	
Brown Oil Co., Robert B., St. Louis, Mo.							
Choice Cotton Seed Meal.....	2161 3746	Terre Haute ---	9.0	9.5	41.0	37.3	
Curry, W. C., Louisville, Ky.							
"Curry's Choice" Cotton Seed Meal.....	2670 3347	Farmland.....	8.5	8.8	41.0	40.2	
East St. Louis Cotton Oil Co., National Stock Yards, Ill.							
"Illinois" Brand Cotton Seed Meal.....	1667 3120	Franklin ---	7.0	9.7	35.0	42.7	
Exchange Cotton & Linseed Meal Co., The, Kansas City, Mo.							
†Rose Brand Cotton Seed Meal.....	2751 3771	Boston ---	7.0	7.0	41.0	40.7	
†Rose Brand Cotton Seed Meal.....	2751 3846	Selma ---	7.0	7.8	41.0	41.8	
Humphreys-Godwin & Co., Memphis, Tenn.							
Dixie Brand Cotton Seed Meal.....	1487 3367	Muncie ---	8.0	7.8	41.0	41.2	

*—Before registration

**—Not registered

†—Not tagged

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection		Guaranteed	Found	Guaranteed	Found	
Hunter Bros. Milling Co., The, St. Louis, Mo.								
Hunter Bros. Milling Co.'s Prime Cotton Seed Meal	2083	3380	Attica -----	7.5	9.9	41.0	45.8	
Hunter Bros. Milling Co.'s Prime Cotton Seed Meal	2083	3770	Carmel -----	7.5	7.0	41.0	44.7	
Roberts Cotton Oil Co., Memphis, Tenn. Cottonseed Meal	2554	3918	Washington ---	7.0	8.6	40.0	41.3	
COLD PRESSED COTTON SEED								
Smith & Co., Geo. B., Chicago, Ill.								
Cold Pressed Cotton Seed	2515	3631	Crown Point --	6.0	10.1	25.2	21.1	
COTTON SEED MEAL AND HULLS (Cotton Seed Feed Meal)								
Cartlett Co., J. B., Jackson, Mich.								
"Cuddomeal"	2332	3691	South Bend----	5.0	4.1	15.0	15.0	
East St. Louis Cotton Oil Co., National Stock Yards, Ill.								
Coweta	2673	4141	Salem -----	4.0	3.7	16.0	12.7	
Tennessee Fiber Co., Memphis, Tenn.								
Creamo Brand Cotton Seed Feed Meal	1373	3150	Indianapolis ---	5.0	4.6	22.0	21.1	
COTTONSEED HULLS								
Hunter Bros. Milling Co., The, St. Louis, Mo.								
Cotton Seed Hulls	2744	3769	Carmel -----	1.0	1.1	3.0	3.4	
ALFALFA PRODUCTS								
McKinson Company, The, Albert, Chicago, Ill.								
Alfalfa Meal	2091	3525	LaFayette ----	2.0	2.0	13.0	14.9	
Alfalfa Meal	2091	3583	Hammond ----	2.0	1.9	13.0	15.6	
Cornalfalfa Feed Milling Co., The, Kansas City, Mo.								
Pioneer Alfalfa Meal	2782	3997	Fort Wayne --	2.0	2.1	14.0	15.0	
Peters Mill Co., M. C., Omaha, Neb.								
"Lucern" Alfalfa Meal	1680	3214	Indianapolis --	2.0	1.7	13.0	14.4	
DRIED DISTILLERS GRAINS								
Berghoff Brewing Co., Fort Wayne, Ind.								
Berghoff's Dried Brewers Grains	1516	3902	Fort Wayne----	6.0	6.3	25.0	26.4	
PROPRIETARY AND MOLASSES FEEDS								
Alfalfa Meal Company, Omaha, Neb.								
Alfalmo	2529	3450	Indianapolis ---	0.1	0.3	0.1	12.7	Principal ingredients identified under microscope
American Milling Company, Chicago, Ill.								
Sucrene Horse and Mule Feed	1947	3119	Franklin -----	3.0	4.2	10.0	12.9	Corn, oats, brewers' grains and molasses
Sucrene Horse and Mule Feed	1947	3123	Evansville ----	3.0	3.6	10.0	8.6	Corn, oats, brewers' grains, grain screenings and molasses

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Principal ingredients identified under microscope								
American Milling Company, Chicago, Ill. Sucrene Horse and Mule Feed.....	2573	3763	Terre Haute....	3.5	4.1	10.0	16.0	Wheat, corn, oats, barley, grain screenings, salt, molasses
Sucrene Dairy Feed.....	2085	3140	Evansville	3.5	5.0	16.5	15.5	Corn, oats, brewers' grains, grain screenings, cottonseed meal, molasses
Sucrene Dairy Feed.....	2085	3146	Indianapolis ..	3.5	5.1	16.5	16.7	Corn, oats, brewers' grains, cottonseed meal, molasses
Sucrene Dairy Feed.....	2573	3374	LaPorte	3.5	4.8	16.5	17.0	Barley, cottonseed meal, grain screenings, molasses
Sucrene Dairy Feed.....	2573	4139	Martinsburg ...	3.5	5.0	16.5	16.7	Wheat, oats, flaxseed, grain screenings, salt, molasses
Badenoch Co., J. J., Chicago, Ill. *Badenoch's Kurvnek Brand Horse Feed.....	2711	3583	Indiana Harbor	4.0	4.8	10.5	10.6	Corn, oats
Barwell, J. W., Waukegan, Ill. Blatchford's Calf Meal.....	1047	4015	Valparaiso	5.0	5.6	25.0	28.5	Locust bean meal, flaxseed
Blatchford's Calf Meal.....	1047	4079	Kendallville ...	5.0	4.3	25.0	22.6	Locust bean meal, flaxseed
Biehl, I. L., Brazil, Ind. Biehl's Mixed Feed.....	1153	3135	Brazil	4.2	5.1	10.5	12.5	Corn, oats, grain screenings, cottonseed meal, wheat bran, molasses
Biehl's Mixed Feed.....	1153	3749	Brazil	4.2	5.8	10.5	13.5	Corn, oats, corn meal, wheat bran
Continental Cereal Co., Peoria, Ill. Continental Gluten Feed	2204	4185	Paoli.....	13.5	13.7	31.0	29.5	Distillers grains, oats
Corn Products Refining Company, Chicago, Ill. Diamond Hog Meal	2249	3569	Chesterton	8.0	11.0	18.0	19.2	Corn bone product,
Edwards & Loomis Co., Chicago, Ill. Edwards Excelsior Crushed Grain Horse Feed	1423	3237	Indianapolis ..	4.4	3.9	11.2	9.7	Corn, oats
Edwards Excelsior Crushed Grain Horse Feed	1423	3590	East Chicago ..	4.4	4.5	11.2	11.2	Corn, oats, barley
A. Edwards Excelsior Crushed Grain Horse Feed	2436	3902	Hammond	3.5	4.4	10.5	10.7	Corn, oats, barley
Pioneer Horse & Cattle Feed.....	2487	3569	Whiting	3.1	2.9	8.0	7.6	Corn, light oats
Ellis, Edwin, Terre Haute, Ind. Eureka Dairy Feed.....	2453	3787	Terre Haute ...	2.0	4.0	10.0	11.4	Corn husks, corn bran, oats, barley
Eureka Mix Feed.....	2900	3788	Terre Haute ...	3.5	3.5	14.0	8.8	Corn, barley, cottonseed meal, grain screenings, molasses

*—Before registration
**—Not registered

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Principal ingredients identified under microscope								
Great Western Cereal Co., The, Chicago, Ill.								
Maizealfalfa Feed	1897	3343	Indianapolis	4.0	4.1	12.0	11.7	Alfalfa, corn product, corn
Maizealfalfa Feed	1897	3584	East Chicago	4.0	3.0	13.0	12.4	Alfalfa, corn product, oats
Grainalfalfa Feed	1905	3244	Indianapolis	4.0	4.9	12.0	10.8	Alfalfa, corn, corn product
Daisy Dairy Feed	2040	3236	Indianapolis	3.0	2.8	14.0	15.9	Cottonseed meal, oat middlings, oat hulls, molasses
Daisy Dairy Feed	2040	4163	Rochester	3.0	3.9	14.0	14.7	Cottonseed meal, oats, oat middlings, oat clippings, molasses
Boss Chop Feed	2530	3761	Terre Haute	3.5	4.3	8.5	8.9	Corn, oats, hominy feed, salt
Boss Chop Feed	2530	3962	Muncie	3.5	4.4	8.5	8.8	Corn, oats, hominy feed
Boss Chop Feed	2530	3160	Indianapolis	3.5	5.2	8.5	8.6	Corn, corn product, oats
Habig Bros., Indianapolis, Ind.								
Habig's Mixed Feed	2520	3260	Indianapolis	4.5	4.9	11.5	11.2	Wheat bran, corn bran, linseed meal, hominy feed
Harper & Sons, James, Wichita, Kansas.								
Harper's Mixed Alfalfa Stock Feed	2258	3239	Indianapolis	3.5	3.5	12.0	11.7	Alfalfa, corn
H. O. Company, The, Buffalo, N. Y.								
H. O. Horse Feed	1932	3245	Indianapolis	4.5	4.1	12.0	12.3	Corn, oats, oat bran, oat hulls, salt
Indiana Milling Co., Terre Haute, Ind.								
Whiskerene	2127	3736	Terre Haute	2.0	2.3	11.4	9.9	Corn husks, silks and plth
Sterling Mixed Feed	2379	3737	Terre Haute	3.0	3.0	11.5	11.8	Wheat bran, middlings and cob meal
Swinero	2693	3740	Terre Haute	1.6	1.6	12.3	10.7	Parched wheat, wheat bran, cob meal
Janes, Frank E., Indianapolis, Ind.								
Janes' Alfalfa Horse Feed	2065	3215	Indianapolis	4.0	3.4	12.7	12.1	Corn, alfalfa
North-West Mills Co., Winona, Minn.								
Sugarota Dairy Feed	2196	3839	Bloomington	4.5	4.8	18.0	15.7	Flaxseed meal, cottonseed meal, flax stems, oat clippings, molasses
Sugarota Dairy Feed	2196	3851	Muncie	4.5	3.9	18.0	16.0	Flaxseed meal, cottonseed meal, flax stems, oat clippings, molasses
Sugarota Dairy Feed	2196	3908	Winona	4.5	5.6	18.0	14.9	Flaxseed meal, cottonseed meal, flax stems, oat clippings, molasses

**—Not registered

*—Before registration

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Principal ingredients identified under microscope								
North-West Mills Co., Winona, Minn. Sugarota Dairy Feed.....	2198	4180	Fort Wayne ..	4.5	6.5	18.0	16.8	Flaxseed meal, bind weed, flax stems, oat clippings, molasses
"Sugarota" Swine Feed.....	2199	3852	Muncie	4.5	4.5	18.0	15.8	Flaxseed meal, cottonseed meal, flax stems, oat clippings, molasses
"Sugarota" Swine Feed.....	2199	3916	Washington ..	4.5	5.0	18.0	16.0	Flaxseed meal, cottonseed meal, flax stems, oat clippings, molasses
"Sugarota" Horse Feed.....	2200	3840	Bloomington ..	3.5	4.8	12.0	13.4	Flaxseed meal, cottonseed meal, flax stems, oat clippings, molasses
Sugarota Cattle Feed.....	2219	3917	Washington ..	5.0	4.9	19.0	15.4	Flax seed meal, cottonseed meal, flax stems, oat clippings, molasses
Peters Mill Co., M. C., Omaha, Neb. Peters' Arab Horse Feed.....	2242	3141	Evansville	3.0	2.9	10.0	11.8	Corn, oats, alfalfa meal, molasses
Peters' Arab Horse Feed.....	2242	3217	Indianapolis ..	3.0	2.8	10.0	11.8	Corn, oats, alfalfa meal, molasses
June Pasture Dairy Feed.....	2432	3216	Indianapolis ..	0.5	0.5	12.0	11.9	Alfalfa meal and molasses
Alfal-fat Sugar Meal.....	2433	3709	Montezuma	0.5	0.7	11.0	11.9	Alfalfa meal and molasses
Quaker Oats Company, The, Chicago, Ill. Schumacher Stock Feed.....	687	3230	Indianapolis ..	4.0	3.1	10.0	10.5	Corn, oat middlings, oat hulls
Victor Feed	688	3231	Indianapolis ..	3.0	3.1	7.5	8.0	Corn, oat middlings, oat hulls
Ralston Purina Company, St. Louis, Mo. Protena Feed	1912	3143	Evansville	4.0	5.4	12.3	12.3	Corn, oats, alfalfa
Weiss Alfalfa Stock Food Co., The, Otto, Wichita, Kansas. The Otto Weiss Alfalfa Stock Food.....	2225	3167	Indianapolis ..	3.5	3.3	12.5	12.1	Corn, linseed meal, alfalfa, salt
Western Grain Products Co., West Hammond, Ill. Hammond Dairy Feed.....	555	2500	Crown Point ..	3.0	4.4	17.0	16.0	Distillers grains, malt sprouts, cottonseed meal, screenings, molasses
Hammond Horse Feed.....	555	3930	W. Hammond..	3.0	4.0	17.0	15.4	Distillers grains, malt sprouts, cottonseed meal, grain screenings, oat clippings, molasses
Hammond Dairy Feed.....	2480	3784	Terre Haute ..	2.8	3.3	12.0	12.4	Corn, wheat, oats, linseed meal, grain screenings, molasses

*--Before registration
**--Not registered

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Wilber & Co., C. H., Brazil, Ind. Wilbers Mixed Feed.....	2636	3137	Brazil	4.0	5.0	10.0	12.4	Principal ingredients identified under microscope Corn, oats, wheat bran, brewers grains, cottonseed meal, grain screenings and molasses Remarks,
POULTRY AND SCRATCH FEEDS								
Alsop Feed & Cereal Co., Indianapolis, Ind. Lay-O Scratch Feed.....	2635	3449	Indianapolis ..	2.5	2.6	10.0	8.5	
American Stock Food Co., Kansas City, Mo. Laymore B.	2639	3189	Indianapolis ..	3.0	1.9	10.0	8.0	
Purity	2640	3164	Indianapolis ..	3.0	3.6	10.0	11.8	
Junior Chick B.	2641	3166	Indianapolis ..	3.0	3.2	10.0	9.5	
Blue Jay	2643	3165	Indianapolis ..	5.0	3.9	12.0	13.2	
*Wheat Meal Mash.....	2683	3181	Indianapolis ..	3.0	3.4	10.0	10.0	
Bash & Co., S., Fort Wayne, Ind. Bash's Chicken Feed.....	904	3901	Fort Wayne ..	3.9	3.1	9.5	10.0	
Bauermeister Company, Inc., Chas. W., Terre Haute, Ind. Bauermeister's Star Feed.....	2408	3765	Terre Haute....	2.0	3.2	8.0	9.8	
Bleker Bros., Hammond, Ind. Chicken Feed	1341	3570	Hammond	2.0	3.2	5.0	11.0	
Browning Milling Co., W. A., Evansville, Ind. Browning's Mixed Chicken Feed.....	2164	3174	Evansville	3.0	3.7	8.0	10.4	
Chamberlain's Feed Co., W. F., St. Louis, Mo. Chamberlain's Perfect Feed.....	2240	3182	Indianapolis ..	3.5	2.7	10.0	11.5	
Delp, Ettinger & Co., Bourbon, Ind. Bourbon Scratch Feed.....	2426	3625	Valparaiso	3.2	2.7	10.0	8.9	
Dickinson Co., The, Albert, Chicago, Ill. "Pine Tree" Scratch Feed, No Grit.....	1129	3630	Valparaiso	2.5	2.8	10.0	10.8	
"Colonial" Developing Feed.....	1925	3169	Indianapolis ..	3.0	2.5	10.5	9.4	
"Globe" Scratch Feed, No. Grit.....	2285	3591	Chesterton	2.5	3.2	10.0	10.8	
"Globe" Scratch Feed.....	2286	3170	Indianapolis	2.5	3.3	10.0	9.8	
"Crescent" Chick Feed.....	2287	3304	Farmersburg	2.5	3.0	10.0	10.0	
"King" Pigeon Feed.....	2288	3168	Indianapolis	2.5	3.1	10.0	11.3	
"Pine Tree" Scratch Feed.....	2360	3171	Indianapolis ..	2.5	2.9	10.0	9.6	
"Queen" Poultry Mash.....	2360	3664	Attica	2.5	3.8	10.0	9.9	
Edwards & Loomis Co., Chicago, Ill. Red Comb Meat Mash	1417	3579	East Chicago ..	5.2	5.1	17.9	17.2	
A. Red Comb Poultry Feed.....	1904	3183	Indianapolis ..	3.3	2.4	10.8	10.0	
"A" Red Comb Poultry Feed No. Grit.....	2351	4071	Campbellsburg..	3.3	3.6	10.8	11.2	
"A" Cackle Poultry Feed.....	2352	3581	Whiting	3.7	3.9	9.5	10.3	
Good Luck Mills, St. Louis, Mo. Good Luck Mill Feed—Chick and Scratch Size	506	3142	Evansville	3.0	2.8	9.0	8.8	
Gotto, O. W., Michigan City, Ind. *Star Brand Scratch Feed.....	2726	3652	Michigan City..	2.5	3.1	10.0	9.7	

*—Before registration

**—Not registered

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat per cent.		Crude Protein per cent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Great Western Cereal Co., The, Chicago, Ill.								
Sterling Chick Feed.....	2459	3242	Indianapolis ..	3.5	2.2	11.0	9.8	
Sterling Scratch Feed.....	2459	3730	Terre Haute ..	3.0	3.0	11.0	10.1	
Habig Bros., Indianapolis, Ind.								
Habig Brothers Chick Food.....	2521	3259	Indianapolis	5.0	3.2	8.0	9.0	
Heitschmidt, A. C., Michigan City, Ind.								
Heitschmidt's Screenings	2551	3655	Michigan City..	2.5	3.1	10.0	9.9	
Illinois Seed Co., The, Chicago, Ill.								
Phoenix Brand Poultry Feed.....	184	3786	Terre Haute ..	3.0	3.0	10.5	10.6	
Indiana Seed Co., The, Indianapolis, Ind.								
Monument Brand Poultry Food.....	2192	3255	Indianapolis ..	3.0	3.4	10.5	9.7	
Maginot Bros., Hammond, Ind.								
Maginot Scratch Feed.....	2655	3585	Hammond	2.0	3.4	10.0	10.3	
Martin Produce Co., West LaFayette, Ind.								
Martin's Special Chick Feed.....	446	3523	W. LaFayette..	2.0	3.4	8.0	10.5	
*Martin's Special Poultry Mash.....	2747	3725	W. LaFayette..	3.0	4.4	12.0	15.3	
Mayflower Mills, Fort Wayne, Ind.								
Mayflower Chick Food.....	831	3145	Indianapolis ..	2.0	2.2	10.0	8.5	
Admiral Chick Food.....	1732	3889	Fort Wayne	2.5	3.4	10.0	10.0	
Bon Ton Poultry Food.....	1733	3885	Fort Wayne	2.5	4.0	10.0	10.5	
Midland Poultry Food Co., Kansas City, Mo.								
Midland Poultry Food No. 4.....	2133	3186	Indianapolis ..	3.3	3.0	17.7	16.3	
Midland Poultry Food Chick Food.....	2363	3188	Indianapolis ..	2.9	2.7	10.0	9.0	
Midland Poultry Food Scratch.....	2364	3187	Indianapolis ..	3.1	3.5	9.4	8.9	
Moellering Bros. & Millard, Ft. Wayne, Ind.								
Peerless Poultry Food.....	1808	3884	Fort Wayne	2.5	3.8	10.0	9.5	
Climax Chick Food.....	1809	3883	Fort Wayne	2.5	2.9	10.0	8.6	
North-West Mills Co., Winona, Minn.								
Sugarota Chicken Feed.....	2320	3381	Attica	3.5	3.6	12.0	11.8	13.5% corn cockle, 11% miscellaneous weed seeds
Ohio Valley Seed Co., Evansville, Ind.								
Bell Brand Poultry Feed.....	1185	3195	Evansville	3.9	3.6	11.2	9.8	
O. K. Seed Store, Indianapolis, Ind.								
O. K. Scratch Feed.....	2362	3213	Indianapolis ..	2.7	5.8	10.0	15.6	
Owens, Flour, Feed and Seeds, E. G., Washington, Ind.								
Owens Scratch Feed.....	1893	3519	Washington ...	2.5	2.7	9.0	12.2	
Perfect & Co., A. H., Fort Wayne, Ind.								
Perfect Chick Food.....	2235	3891	Fort Wayne	2.7	3.1	10.0	10.1	
Perfect Scratch Feed.....	2236	3893	Fort Wayne	3.0	3.8	10.0	10.1	
Quaker Oats Company, The, Chicago, Ill.								
Schumacher Scratching Grains.....	1763	3185	Indianapolis ..	3.0	3.3	10.5	10.6	
Red Hen Scratching Grains.....	2218	3184	Indianapolis ..	3.0	3.0	10.5	9.0	
Schumacher Little Chick Feed.....	2331	3335	Indianapolis ..	3.5	3.0	10.5	9.7	
Ralston Purina Co., St. Louis, Mo.								
Purina Mill Feed—Chick and Scratch Size	545	3134	Brazil	3.6	3.4	11.0	10.9	
Purina Mill Feed—Chick and Scratch Size	545	3527	LaFayette	3.6	3.2	11.0	10.5	

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number	Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
			Guaranteed	Found	Guaranteed	Found	
Rauh & Sons, E., Indianapolis, Ind.							
Rauh's Poultry Food.....	585 3448	Indianapolis ..	10.0	8.6	65.0	64.1	
Small & Co., Inc., W. H., Evansville, Ind.							
"Eclipse" Poultry Feed.....	1964 3304	Evansville ..	5.0	3.2	9.4	10.5	
"Eclipse" Chick Feed.....	1963 3308	Evansville ..	3.5	3.5	9.5	11.0	
Smith, Roper & Co., Hobart, Ind.							
Hobart Hen Feed.....	2538 3563	Hobart ..	1.8	3.3	9.0	10.5	
ANIMAL MEALS							
American Stock Food Co., Kansas City, Mo.							
Beef Scraps	2642 3130	Indianapolis ..	10.0	10.9	50.0	55.8	
Armour Fertilizer Works, The, Chicago, Ill.							
Blood Meal	900 3653	Michigan City..	0.0	0.3	80.0	83.8	
Darling & Company, Chicago, Ill.							
Beef Scraps	751 3571	Hammond ..	10.0	11.6	55.0	60.0	
Beef Meal	753 3572	Hammond ..	10.0	8.3	45.0	46.6	
Darling's 40% Digester Tankage.....	3504 4100	Argos ..	5.0	12.6	40.0	42.5	
Rauh & Sons, E., Indianapolis, Ind.							
Rauh's Digester Tankage for Hogs.....	2007 3148	Indianapolis ..	0.0	5.0	60.0	64.2	
Swift & Company, Chicago, Ill.							
Swift's Beef Scraps.....	59 3559	Crown Point..	12.0	13.9	55.0	52.5	
Swift's Beef Scraps.....	59 4050	Shipshewana ..	12.0	13.9	55.0	52.8	
CONDIMENTAL STOCK FOODS, REGISTERED							
Hawks, D. H., Goshen, Ind.							
Excelsior Horse and Cattle Powder ¹	1427 3828	Goshen ..	16.0	14.7	14.0	15.6	Principal ingredients identified under microscope
Medicura Food Co., Indianapolis, Ind.							
Medicura Stock Food.....	630 3841	Crawfordsville.	3.3	2.0	7.4	10.0	Epsom salts, salt-petre, copperas, sulphur, fenugreek, gentian, salt, oil meal
Parker & Rice, Goshen, Ind.							
I. X. L. Horse and Cattle Powder ²	1443 3827	Goshen ..	8.1	5.6	13.3	27.5	Gentian, rosin, salt, charcoal, wheat middlings
Peelle Food Co., The, Frankfort, Ind.							
Peelle's Stock Conditioner ³	475 3853	Frankfort ..	5.6	5.4	31.5	30.2	Epsom salts, salt-petre, ginger, sulphur, flaxseed meal
Ragon Stock Food Co., D. S., Evansville, Ind.							
Farmers Stock Food.....	261 3170	Evansville ..	4.8	3.8	13.5	12.9	Fenugreek, gentian, salt, sulphur, charcoal, oil meal
Farmers Stock Food.....	261 3767	Terre Haute ..	4.8	3.3	13.5	13.7	Gentian, ginger, sassafras, salt, charcoal, wheat product

¹1.7% sulphur removed from ether extract.
²11.2% sulphur removed from ether extract.
³1.4% sulphur removed from ether extract.

Nitrogen in saltpetre present is included in crude protein found.
 Nitrogen in saltpetre present is included in crude protein found.

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Shrader Drug Co., Iowa City, Ia.								Principal ingredients identified under microscope
Eureka Stock Food.....	756	3105	Peru	6.7	6.3	30.2	28.3	Fenugreek, gentian, anise, salt, linseed meal
Eureka Stock Food.....	756	3776	Denver	6.7	6.2	30.2	31.0	Fenugreek, gentian, anise, salt, oil meal
Eureka Stock Food.....	756	3801	Huntington	6.7	6.7	30.2	27.7	Fenugreek, gentian, ginger, anise, salt, linseed meal.
Standard Stock Food Co., Omaha, Neb.								
Standard Stock Food ⁴	1008	3343	Crawfordsville.....	0.0	6.9	0.0	10.0	Fenugreek, gentian, sulphur, salt, charcoal, corn product, linseed meal
CONDIMENTAL STOCK FOODS, NOT REGISTERED								
Capitol Stock Food Co., Tiffin, Ohio.								
Capitol Stock Food Remedy.....		3717	Bridgeton	2.6			8.0	Glauber salts, copperas, fenugreek, gentian, salt, charcoal, wheat product
Fleck, J. J., Tiffin, Ohio.								
Fleck's Condition Powder ⁵		3761	Terre Haute	1.8		27.6		Epsom salts, sulphur, beans or peas, charcoal
Lee Company, Geo. H., Omaha, Neb.								
Lee's Best Conditioner ⁶		3844	Crawfordsville.....	2.3		31.8		Glauber salts, gentian, anise, sulphur, salt, linseed meal
Pratt Food Co., Philadelphia, Pa.								
Pratt's Animal Regulator.....		3790	Terre Haute	8.5		12.6		Glauber salts, fenugreek, gentian, anise, salt, corn product, flax pods
Seneca Company, The, Tiffin, Ohio.								
Seneca Horse Condition Powder ⁷		3749	Terre Haute	1.4		17.4		Glauber salts, saltpetre, salt, charcoal, oil meal
Stock Food Co. of America, Minneapolis, Minn.								
Clover Brand Stock Tonic ⁸		3824	Washington	3.1		2.7		Glauber salts, gentian, ginger, anise, sulphur, salt, Peruvian bark
Wilber Stock Food Co., Milwaukee, Wis.								
Wilber's Stock Tonic ⁹		3956	Bedford	2.2		15.0		Saltpetre, fenugreek, gentian, salt, charcoal, wheat middlings, weed seeds, flax bran
CONDIMENTAL POULTRY FOODS, REGISTERED								
Ehrmann & Co., Terre Haute, Ind.								
Ehrmann's Poultry Food.....	606	3789	Terre Haute	15.0	21.7	6.0	45.1	Meat product, carbolic acid
Lee & Co., Geo. H., Omaha, Neb.								
Lee's Egg Maker and Chick Grower ¹⁰	1306	3964	Bedford	3.0	1.2	35.0	37.7	Gentian, saltpetre, Glauber's salt, salt, copperas, sulphur, charcoal, blood meal
⁴ 0.9% sulphur removed from ether extract. ⁵ 4.0% sulphur removed from ether extract. ⁶ 4.5% sulphur removed from ether extract. ⁷ 4.8% sulphur removed from ether extract. ⁸ 3.1% sulphur removed from ether extract. ⁹ Nitrogen in saltpetre present included in crude protein found. ¹⁰ 2.0% sulphur removed from ether extract. Nitrogen in saltpetre present is included in crude protein found.								

TABLE VIII.—Report of Inspection of Feeds Collected (continued)

LABEL	Number		Sample taken at	Crude Fat percent.		Crude Protein percent.		REMARKS
	Official	Inspection C.		Guaranteed	Found	Guaranteed	Found	
Lee & Co., Geo. H., Omaha, Neb. †Lee's Egg Maker ¹¹ -----	4181		Middlebury	0.8		30.5		Principal ingredients identified under microscope Gentian, saltpetre, ginger, salt, copperas, sulphur, fenugreek, charcoal, blood meal
Medicura Food Co., Indianapolis, Ind. Medicura Poultry Food-----	640	3842	Crawfordsville	2.7	1.5	7.4	9.1	Gentian, salt, copperas, calcium carbonate, Venetian red, wheat middlings
Peelle Food Co., The, Frankfort, Ky. Peelle's Poultry Powder and Improved Egg Producer ¹² -----	474	3854	Frankfort	5.4	6.8	31.2	32.6	Fenugreek, gentian, sulphur, charcoal, oyster shell, oil meal
Ragon Stock Food Co., Evansville, Ind. Farmers Poultry Food-----	262	3177	Evansville	5.6	4.3	16.3	14.0	Gentian, ginger, sassafras, salt, saltpetre, wheat product
CONDIMENTAL POULTRY FOODS, NOT REGISTERED								
Fleck, J. J., Tiffin, Ohio. Fleck's Poultry Food ¹⁴ -----	4129		Middlebury	0.7		10.8		Epsom salts, saltpetre, Venetian red, pepper, sulphur, bone, Peruvian bark
Hawks, Dwight H., Goshen, Ind. Hawks Poultry Food ¹⁵ -----	4128		Goshen	8.8		4.6		Glauber's salts, saltpetre, fenugreek, pepper, sulphur, Venetian red, rosin
Scotland Stock Food Co., St. Louis, Mo. Scotland Poultry Food ¹⁶ -----	3781		Terre Haute	0.6		23.5		Glauber salts, sulphur, corn product, flax seed screenings
Seneca Company, The, Tiffin, Ohio. Seneca Poultry Powder ¹⁷ -----	3750		Terre Haute	1.0		13.7		Gentian, pepper, sulphur, charcoal, Venetian red. Some filler present, but unable to identify, probably flax bran
Stock Food Co., of America, Minneapolis, Minn. Clover Brand Poultry Tonic ¹⁸ -----	3923		Washington	1.5		9.7		Saltpetre, gentian, ginger, anise, capsicum, oyster shell, alfalfa
MISCELLANEOUS								
Conkey Co., The, G. E., Cleveland, Ohio. Conkey's Laying Tonic ¹⁹ -----	3966		Muncie	0.7		21.1		Glauber's salt, saltpetre, copperas, gentian, salt, pepper, charcoal

†Not tagged

¹¹3.9% sulphur removed from ether extract.¹²1.6% sulphur removed from ether extract.¹³1.9% sulphur removed from ether extract.¹⁴1.3% sulphur removed from ether extract.¹⁵4.5% sulphur removed from ether extract.¹⁶4.6% sulphur removed from ether extract.¹⁷4.7% sulphur removed from ether extract.¹⁸4.7% sulphur removed from ether extract.¹⁹4.7% sulphur removed from ether extract.

Nitrogen in saltpetre present is included in crude protein found.

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Nitrogen in saltpetre present is included in crude protein found.

Nitrogen in saltpetre present is included in crude protein found.

TABLE IX.—Brands Registered and on Sale to April 1st, 1910

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
1—BRAN, MIDDINGS, SHORTS, CHOP FEEDS AND OTHER MILL BY-PRODUCTS						
Abbott Bros., Elwood, Ind. Abbott's Chop Feed.....	109	3.8	9.4	7.0		Corn, oats, wheat and rye products
Acme-Evans Co., Indianapolis, Ind. Evans' Hoosier Mill Feed.....	2405	4.0	15.7	10.0		Wheat bran, middlings and screenings
Acme Feed	2417	4.0	15.0	10.0		Wheat bran and middlings
Hoosier Mill Feed.....	2534	4.0	15.7	10.0		Wheat bran and middlings
2-10	2555	3.0	10.0	9.0		Wheat screenings
Acme Milling Co., The, Aurora, Ind. Middlings	908	3.9	14.2	6.6		Wheat Product
Chop Feed (Corn and Oats).....	909	3.8	10.5	8.7		Corn and Oats
Bran and Middlings.....	970	3.9	14.3	8.3		Wheat bran and middlings
Wheat Bran	971	3.7	14.1	10.1		Wheat product
Mixed Bran	2555	3.7	13.6	10.0		Wheat and corn bran
Adams, I. A., Bunker Hill, Ind. I. A. Adams' Corn and Oats Chop.....	906	3.9	9.5	6.0		Corn and oats
Ahr & Singer, Monroeville, Ind. Corn and Oats Chop.....	1504	3.9	9.5	6.0		Corn and oats
Wheat Middlings	1505	4.0	10.0	7.0		Wheat product
Wheat Bran	1506	3.8	14.0	10.0		Wheat product
Akin-Erskine Milling Co., The, Evansville, Ind. "Pure Winter Wheat Bran".....	85	3.1	15.6	10.1		Wheat product
"Pure Winter Wheat Fancy Shorts".....	86	4.5	18.3	3.9		Wheat product
Winter Wheat Mixed Feed	2297	4.0	15.0	9.0		Wheat bran, middlings and screenings
Akron Milling Co., The, Akron, Ind. Akron Chop	2794	3.5	9.0	8.0		Corn, oats, corn bran and screenings
Wheat Middlings	2795	4.0	14.0	7.0		Wheat product
Wheat Bran	2796	3.9	14.0	12.0		Wheat product
Alexander, Robert, Buck Creek, Ind. Corn and Oats Chop.....	1508	3.9	9.5	6.0		Corn and oats
Allan, J. P., Farmersburg, Ind. J. P. Allen's Mixed Feed.....	2309	4.0	9.5	12.0		Wheat bran, hominy feed and oats
Alton Milling Co., Alton, Ind. Wheat Middlings	1245	3.0	12.0	6.0		Wheat product
Wheat Bran	1247	3.8	14.0	10.0		Wheat product
Amboy Milling Co., Amboy, Ind. ¹ Bran	2312	3.5	13.0	10.0		Wheat product
Middlings	2313	4.0	14.0	8.0		Wheat product
Chop Feed	2314	3.0	10.0	6.0		Corn, oats, rye and wheat screenings
Amo Mill & Elevator Co., Amo, Ind. Amo Feed	2630	3.5	13.0	12.0		Wheat bran and screenings
Amo Middlings	2631	3.3	14.0	7.0		Wheat product
Anderson, C., New Waverly, Ind. Wheat Middlings	1321	4.0	14.0	8.0		Wheat product
Mixed Bran	1322	4.0	12.0	13.0		Wheat and corn bran

¹Succeeded by Amboy Roller Mills.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Anderson & Bowen, Mooreland, Ind.						
Middlings	2553	3.8	14.0	8.0	Wheat product	
Bran and Screenings	2558	3.5	13.0	9.0	Wheat bran and screenings	
Chop Feed	3006	3.4	8.5	13.0	Corn, oats, corn bran, corn screenings and wheat screenings	
Anderson & Densine, Kouts, Ind.						
Chop Feed	435	3.7	9.0	8.0	Corn and oats	
Anderson & Densine's Wheat Bran	423	3.7	14.0	10.0	Wheat product	
Buckwheat Bran	1433	3.0	12.3	33.0	Buckwheat product	
Mixed Feed	1437	4.0	13.0	7.0	Buckwheat and rye product	
Middlings	2574	1.5	10.0	6.0	Wheat product	
Anderson & Ray, Dunkirk, Ind.						
Corn and Oats Chop	1639	3.0	9.5	6.0	Corn and oats	
Anglemeyer, Jerry, Mt. Zion, Ind.						
Anglemeyer's Wheat Middlings	1134	4.0	14.0	7.0	Wheat product	
Anglemeyer's Wheat Bran	1135	3.8	14.0	10.0	Wheat product	
Anglemeyer's Corn and Oat Chop	1136	3.9	9.5	6.0	Corn and oats	
Angola Flouring Mills, Angola, Ind.						
Angola Flouring Mills Middlings	1097	4.0	14.0	7.0	Wheat product	
Angola Flouring Mills Wheat Bran	1098	3.8	14.0	10.0	Wheat product	
Angola Flouring Mills Chop Feed	1099	3.9	9.5	7.0	Corn, oats and rye	
Arms & Kidder, Kansas City, Mo.						
Wheat Bran	2049	3.8	14.0	11.0	Wheat product	
Wheat Shorts	2063	4.0	14.0	5.0	Wheat product	
Armstrong Bros. Milling Co., Fredericksburg, Ind.						
Armstrong's Mill Feed	339	3.8	14.3	10.0	Wheat product	
Arnold & Nelson, Montpelier, Ind.						
Corn and Oats Chop	1555	3.9	9.0	9.0	Corn and oats	
Arrasmith & Son, Wm., Dana, Ind.						
Corn Bran	717	5.0	8.0	13.0	Corn product	
Wheat Middlings	718	4.0	14.0	7.0	Wheat product	
Corn and Oats Chop	719	3.9	9.5	6.0	Corn and oats	
Wheat, Corn and Oats Chop	730	3.9	10.0	3.5	Wheat, corn and oats	
Wheat Bran	721	3.8	14.0	10.0	Wheat product	
Auburn Roller Mills, M. E. Hursh, Auburn, Ind.						
Auburn Roller Mills Chop	774	3.9	9.5	6.0	Corn and oats	
Auburn Roller Mills Wheat Bran	775	3.8	14.0	10.0	Wheat product	
Auburn Roller Mills Middlings	776	4.0	14.0	7.0	Wheat product	
Mixed Feed	3003	3.8	14.0	10.0	Wheat bran, screenings and corn bran	
Augusta Mill Co., Augusta, Ind.^a						
Bran	533	3.8	14.0	10.0	Wheat product	
Aukerman, L. C. & O. E., Crete, Ind.						
Rye, Wheat and Oats Chop	1755	3.9	9.5	6.0	Rye, wheat and oats	
Bachman, Valentine, Indianapolis, Ind.						
Bachman's Cleaned Wheat Product	757	3.7	14.0	10.0	Wheat product	
Bader & Needham, Pulaski, Ind.						
Pulaski Bran	1303	3.5	12.0	12.0	Wheat and corn product	
Pulaski Middlings	1309	4.0	14.0	10.0	Wheat product	
Pulaski Chop	1310	3.7	9.0	6.0	Corn and oats	
Pulaski Buckwheat Bran	3094	4.0	14.0	25.0	Buckwheat product	

^aSucceeded by Ajic J. Scales.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Baer Flour & Feed Co., Delmar, F., South Bend, Ind.						
Wheat Bran	1061	3.5	12.0	12.0	Wheat product	
Wheat Middlings	1069	3.0	12.0	10.0	Wheat product	
Corn and Oat Chop	1069	2.5	8.0	8.0	Corn and oats	
Baker, E. H., Oakland City, Ind.						
Mixed Feed	2276	4.0	14.0	11.0	Wheat product, screenings and corn bran	
Baker Com. Co., Allen, St. Louis, Mo.						
Apex Mixed Feed	2261	4.0	14.0	9.0	Wheat product	
Baldwin, Jr., Dwight M., Minneapolis, Minn.						
Dwight Flour Mills Pure Bran	2504	4.0	14.0	11.5	Wheat product	
Dwight Flour Mills Pure Wheat Flour Middlings	2506	5.0	17.0	12.0	Wheat product	
Dwight Flour Mills Pure Shorts	2506	4.5	14.5	12.0	Wheat product	
Ballard & Ballard Co., Louisville, Ky.						
Bran	1851	4.6	15.3	9.0	Wheat product	
Ballard's Shipstuff	2016	3.7	15.6	6.8	Wheat product	
Ballard's Shorts	2017	4.1	15.0	7.9	Wheat product	
Ballard's Mixed Wheat Feed	2501	4.1	15.0	7.9	Wheat product	
Banister, B., LaFountaine, Ind.						
Mixed Feed	2859	2.0	7.0	9.0	Wheat screenings, corn screenings and oat screenings	
Banner Roller Mills, The, Mooresville, Ind.						
Wheeler's Banner Mixed Feed	437	3.9	14.0	8.5	Wheat and corn products	
Bargersville Elevator Company, Bargsersville, Ind.						
Bulls' Bye	1509	4.0	12.0	6.2	Corn, oats and wheat screenings	
Elevator Mix	1245	5.0	13.0	5.1	Corn and oats	
Barlow, C. M., Kokomo, Ind.						
Chop Feed	177	3.8	9.3	7.0	Corn and oats	
Wheat Bran	178	3.6	13.7	11.0	Wheat product	
Wheat Middlings	179	3.9	14.5	7.9	Wheat product	
Corn Bran	1702	5.0	8.0	12.0	Corn product	
Barnes & Company, B. J., Dunkirk, Ind.						
"Bran"	297	4.0	15.1	10.0	Wheat product	
Middlings	298	2.9	13.9	8.5	Wheat product	
Bran and Middlings	299	3.6	15.6	10.2	Wheat product	
New Chop Feed	1761	3.5	9.5	8.0	Corn, oats and wheat screenings	
Barrett Elevator Co., Greenfield, Ind.						
Chop Feed	2947	3.9	9.0	9.0	Corn, oats and corn bran	
Shorts	2348	4.0	14.0	8.0	Wheat product	
Bran	2349	3.5	14.0	10.0	Wheat product	
Mixed Feed	2618	4.0	14.0	10.0	Wheat bran and shorts	
Bash & Co., C. E., Huntington, Ind.						
C. E. Bash & Co.'s Chop	1749	3.9	9.5	6.0	Corn and oats	
Bash & Co., S., Fort Wayne, Ind.						
Bash's Chop Feed	905	3.9	9.5	6.0	Wheat, corn, oats, barley and rye	
Batchelor, Fox & Davis, Sharpsville, Ind.						
Wheat Bran	345	3.8	14.0	10.0	Wheat product	
Wheat Shorts	346	4.0	14.0	8.0	Wheat product	
Corn Bran	347	5.0	8.0	12.0	Corn product	
Bauermeister Company, Inc., Chas. W., Terre Haute, Ind.						
Bauermeister's Star Feed	2408	2.0	8.0	8.0	Wheat, corn, kaffir corn, millet seed	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Beanblossom & Sons, D. B., Mauckport, Ind. Wheat Bran ----- Wheat Middlings -----	1075 2882	3.8 3.1	14.0 14.0	10.0 7.0	Wheat product Wheat product	
Beuchamp Feed Store, Ward, Andrews, Ind. Corn and Oats Chop-----	1718	3.0	9.0	7.0	Corn and oats	
Beck, Delbert F., Burlington, Ind. Beck's Chop Feed-----	1209	3.9	9.5	6.0	Corn and oats	
Becker Bros., Freetown, Ind. Becker Bros. Wheat Shorts----- Becker Bros. Wheat Bran-----	1806 1807	4.0 3.7	14.0 14.0	8.0 10.0	Wheat product Wheat product	
Beckman Supply Co., The, Hammond, Ind. Corn and Oats Chop----- Wheat Bran ----- Wheat Middlings -----	1846 1847 1848	3.0 3.0 3.0	9.0 13.0 13.0	9.0 10.0 10.0	Corn and oats Wheat product Wheat product	
Beeson & Seagrave, Losantville, Ind. B. & S. Chop Feed-----	269	3.9	9.5	6.0	Corn and oats	
Bell, W. H., Michigan City, Ind. Wheat Bran ----- Wheat Middlings -----	2729 2730	3.9 4.0	14.0 14.0	11.0 7.0	Wheat product Wheat product	
Belt Elevator & Feed Co., Indianapolis, Ind. Corn and Oats Chop-----	2116	3.9	9.5	7.0	Corn and oats	
Beltz, Calvin V., Tippecanoe, Ind. Beltz's Wheat Middlings----- Beltz's Wheat Bran -----	1730 1731	3.8 3.5	14.0 13.0	7.0 10.0	Wheat product Wheat product	
Bender & Kessens, Siberia, Ind. Bender & Kessens Wheat Bran-----	738	3.7	14.0	7.0	Wheat product	
Benham Milling Co., The, Benham, Ind. Wheat Shorts ----- Wheat Bran -----	2948 2949	3.5 3.9	13.5 14.0	7.0 12.0	Wheat product Wheat product	
Bergenroth Bros., Troy, Ind. Wheat Shorts and Screenings----- Bergenroth's Wheat Bran and Screenings----- Middlings -----	2023 2024 2025	4.0 3.8 4.0	14.0 14.0 15.0	8.0 10.0 6.0	Wheat product and screenings Wheat product and screenings Wheat product	
Berne Grain & Hay Co., Berne, Ind. Excelsior Corn and Oats Chop-----	2476	3.5	9.2	6.0	Corn and oats	
Berne Milling Co., Berne, Ind. Berne Milling Co.'s Chop----- Berne Milling Co.'s Wheat and Corn Bran----- Wheat Middlings -----	1116 1117 2107	3.9 3.8 3.3	9.5 14.0 14.0	6.0 10.0 7.0	Corn and oats Wheat and corn product Wheat product	
Bernet, Craft & Kauffman Milling Co., St. Louis, Mo. Pure Wheat Bran ----- Pure Wheat Mixed Feed, Bran and Midds----- Pure Wheat Midds-----	2392 2393 2394	3.5 3.5 4.9	14.3 14.3 17.3	10.0 9.0 8.0	Wheat product Wheat bran and middlings Wheat product	
Besser, W. T., Greencastle, Ind. Besser's Chop Feed----- Besser's Middlings ----- Besser Extra Mixed Feed-----	322 324 1943	4.1 3.6 3.5	10.3 13.2 12.0	7.7 8.3 12.0	Corn oats and corn bran Wheat product Wheat product, screenings and corn bran	

^aSucceeded by James A. Slagal.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Bickhart, Chris. J., St. Paul, Ind. Up-to-Date Wheat Bran..... Wheat Middlings and Wheat Shorts.....	1669 1668	3.5 4.0	12.0 13.5	10.0 8.0	Wheat product Wheat product	
Bleker, F. A., Crown Point, Ind. Wheat Middlings..... Wheat Bran..... Corn and Oats Chop.....	1360 1361 1362	4.0 3.8 3.5	14.0 14.0 9.0	7.0 10.0 9.0	Wheat product Wheat product Corn and oats	
Bleker Bros., Hammond, Ind. Wheat Middlings..... Wheat Bran..... Corn and Oats Chop.....	1339 1339 1340	3.0 3.0 3.0	12.0 12.0 9.0	10.0 12.0 9.0	Wheat product Wheat product Corn and oats	
Big Diamond Milling Co., Minneapolis, Minn. Big Diamond Bran..... Big Diamond Middlings.....	2125 2126	3.8 3.8	14.0 14.0	10.0 10.0	Wheat product Wheat product	
Billman & Sons, C. H., Shelbyville, Ind. Shelby Shorts..... Shelby Wheat Bran..... "A" Shelby Mixed Feed.....	94 95 2484	4.0 3.8 3.8	14.0 14.0 13.5	8.0 10.0 10.0	Wheat product Wheat product Wheat bran, shorts, screenings and corn bran	
Bischoff & Bros., A. G., Morris, Ind. Bischoff & Bros.' Wheat Bran and Screenings..... Bischoff & Bros.' Wheat Middlings..... Mixed Feed.....	714 715 2052	3.0 4.0 3.0	14.0 14.6 14.0	10.0 5.4 9.0	Wheat bran and screenings Wheat product Wheat and rye product	
Bishop Elevator Co., Logansport, Ind. Chop Feed.....	554	3.9	9.5	6.0	Corn and oats	
Blanton Milling Co., The, Indianapolis, Ind. Blanton's Mixed Feed..... Blanton's Middlings.....	46 47	3.7 3.6	15.7 16.1	9.0 5.8	Wheat product Wheat product	
Blasingham & Co., F. M., Logansport, Ind. Chop Feed.....	2183	3.5	9.0	7.0	Corn and oats	
Blayney, C. F., Angola, Ind. Wheat Middlings..... Wheat Bran..... Corn and Oats Chop.....	1639 1640 1641	4.0 3.8 3.9	14.0 14.0 9.5	7.0 10.0 6.0	Wheat product Wheat product Corn and oats	
Bledsoe, Ernest E., Dugger, Ind. Deacons Horse Feed.....	2913	4.0	10.0	5.0	Corn and oats	
Bliss Milling Co., Seymour, Ind. Bulls' Eye Mixed Feed.....	2179	4.5	16.0	9.0	Wheat bran, middlings and screenings	
Bloomfield Milling Co., Bloomfield, Ind. "Mill Feed"..... Mixed Mill Feed.....	889 1854	4.5 4.1	15.4 12.8	7.0 10.0	Wheat bran and middlings Wheat bran, middlings, screenings and corn bran	
Bloomington Milling Co., The, Bloomington, Ind. Mixed Feed..... Mixed Feed..... Mixed Feed.....	7 8 2687	4.0 3.0 4.0	14.0 13.0 14.0	7.0 8.0 7.0	Wheat product Wheat bran, middlings and corn bran Wheat bran, middlings and screenings	
Bluffton Milling Co., Bluffton, Ind. Wheat Shorts..... Wheat Bran..... Corn, Oats and Rye Chop.....	660 661 662	4.5 3.8 3.2	14.9 14.0 11.5	7.4 10.0 6.0	Wheat product Wheat product Corn, oats and rye	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Bock, Leonard, Argos, Ind.						
Wheat Middlings	548	4.0	14.0	7.0	Wheat product	
Chop Feed	549	3.9	9.5	6.0	Corn and oats	
Wheat Bran	550	3.7	14.0	10.0	Wheat product	
Mixed Feed	2843	3.7	14.0	13.0	Wheat bran, screenings and corn bran	
Boehmer & Ritzer, Scott, Ind.						
Wheat Middlings	1027	4.0	14.0	7.0	Wheat product	
Wheat Bran	1028	3.8	14.0	10.0	Wheat product	
Boelter, C. F., Union Mills, Ind.						
Boelter's Chop Feed	919	3.9	9.5	6.0	Corn and oats	
Boelter's Wheat Bran	920	3.8	14.0	10.0	Wheat product	
Mixed Buckwheat Bran and Middlings	1306	4.0	17.0	25.0	Buckwheat product	
Wheat Shorts	2706	3.9	14.0	9.0	Wheat product	
Boldt & Son, Crawfordsville, Ind.						
Boldt's Shorts	51	4.0	14.0	8.0	Wheat product	
Boldt's Mixed Feed	52	3.5	13.0	10.0	Wheat bran, screenings and corn bran	
Boldt's Corn and Oat Chop	53	3.9	9.5	6.0	Corn and oats	
Boles & Jones, Milroy, Ind.						
Middlings	408	3.1	14.1	9.0	Wheat product	
Bran	409	3.1	14.5	10.0	Wheat product	
Wheat and Corn Bran and Screenings	2081	3.1	14.5	10.0	Wheat bran, screenings and corn bran	
Bonneville Mills, Bonneville, Ind.						
Bonneville Mills Chop Feed	1190	3.9	9.5	6.0	Corn and oats	
Boonville Milling Co., Boonville, Ind.						
Boonville Milling Company's Wheat Bran Shorts	929	3.7	14.0	10.0	Wheat product	
"A" Mixed Feed	930	4.0	14.0	7.0	Wheat product	
Wheat Bran and Screenings	2244	3.8	14.0	11.0	Wheat product and screenings	
	2843	3.7	14.0	10.0	Wheat bran and screenings	
Boston Milling Co., Eckerty, Ind.						
Bobbitt's Wheat Bran	806	3.7	14.0	10.0	Wheat product	
Boswell Bros., Marion, Ind.						
Boswell Bros.' Corn and Oats Chop Feed	745	3.9	9.5	6.0	Corn and oats	
Mixed Bran	1503	4.0	9.0	13.0	Wheat and corn product	
Brafford Milling & Grain Co., Winamac, Ind.						
Chop Feed	1806	3.0	9.0	6.0	Corn and oats	
Branch Grain & Seed Co., Martinsville, Ind.						
Horse Feed	272	3.5	9.0	6.0	Corn and oats	
Three "B" Horse Feed	1403	3.0	8.0	16.0	Corn, wheat bran, shorts and wheat straw	
Monarch Cow Feed	1625	2.5	8.0	8.0	Wheat screenings	
Branches Wheat Product	1901	3.0	13.0	6.0	Wheat bran, shorts and screenings	
Chop Suey	1900	2.0	6.0	2.0	Corn and wheat screenings	
Bridgeton Roller Mills, Bridgeton, Ind.						
Wheat Bran	643	3.8	14.0	10.0	Wheat product	
Mixed Feed	1210	4.0	9.8	9.0	Corn, wheat, oats, corn bran and screenings	
Middlings	2850	2.0	14.0	7.0	Wheat product	
Bristol Milling Co., Bristol, Ind.						
Bristol Milling Co.'s Chop Feed	1157	3.9	9.5	6.0	Corn and oats	
Wheat Middlings	2019	4.0	14.0	7.0	Wheat product	
Wheat Bran	2150	3.8	13.0	9.0	Wheat product	
Bristow Flouring Mills, Bristow, Ind.						
Hall's Mixed Feed	2019	3.0	13.0	7.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Brizius Co., Chas. W., The, Evansville, Ind.						
“Eagle Corn Bran”	2213	4.0	8.3	13.5		Corn bran
“Eagle Mixed Feed”	2419	4.0	15.1	5.9		Wheat bran and middlings
“Eagle Shipstuf”	2420	4.3	15.8	7.0		Wheat product
Broadway Mills, Vincennes, Ind.						
Wheat Bran and Middlings	299	3.7	14.1	8.0		Wheat product
Wheat Middlings	301	3.7	14.0	5.9		Wheat product
Bran and Screenings	2323	3.7	14.0	11.0		Wheat bran and screenings
Brook Flour & Feed Mill, Brook, Ind.						
Corn Bran	2430	4.5	7.0	10.0		Corn bran
Chop Feed	2431	3.5	9.0	8.0		Corn and oats
Brose, George, Evansville, Ind.						
Bran	969	3.2	15.7	8.5		Wheat product
Shipstuf	2507	4.4	15.6	6.2		Wheat product
Wheat Bran and Screenings	2942	3.2	13.5	12.0		Wheat bran and screenings
Brow & Arnold, Evansville, Ind.						
Shipstuf	192	4.0	14.0	8.0		Wheat product
Bran and Screenings	2267	3.7	14.0	11.0		Wheat product and screenings
Brotherton & Son, R. E., Terre Haute, Ind.						
Chop Feed	1119	3.5	10.5	5.5		Wheat bran, corn meal and oats
Brown, Geo., Evansville, Ind.						
Brown's Horse Feed	749	3.9	13.0	9.0		Ground corn, wheat bran and oats
Brown, O. L., Campbellsburg, Ind.						
Mixed Feed	1967	3.5	12.5	10.5		Wheat product
Browning & Company, Alexandria, Ind.						
Browning's Corn and Oats Chop	395	3.9	9.5	6.0		Corn and oats
Browning's Shorts	396	4.0	14.0	8.0		Wheat product
Browning's Bran	397	3.8	14.0	10.0		Wheat product
Browning Milling Co., W. A., Evansville, Ind.						
Corn Bran	2163	4.0	7.0	14.0		Corn product
Browns Feed Mill, Chesterton, Ind.						
Chop Feed	2117	3.9	9.5	7.0		Corn and oats
Brudi & Co., Jos., New Haven, Ind.						
Wheat Bran	565	3.8	14.0	7.0		Wheat product
Corn and Oat Chop Feed	566	3.9	9.5	6.0		Corn and oats
Middlings	2246	2.8	13.1	8.0		Wheat product
Brumfield & Brumfield, Russellville, Ind.						
Bran	1709	3.7	14.0	12.0		Wheat product, corn bran and screenings
Brumfield & Co., J. W., Milton, Ind.⁴						
Wheat Middlings	1758	4.0	14.0	7.0		Wheat product
Wheat Bran, Corn Bran and Wheat Screenings	1754	3.7	13.0	10.0		Wheat product, screenings and corn bran
Bryant Grain Co., The, Bryant, Ind.						
Chop Feed	2309	3.0	9.5	6.0		Corn and oats
Buck, F. P., Pleasant Lake, Ind.						
Buck's Chop Feed	1139	3.9	9.5	6.0		Corn and oats
Wheat Middlings	1707	4.0	14.0	7.0		Wheat product
Wheat Bran	1708	3.7	14.0	10.0		Wheat product

⁴Succeeded by G. J. Klemm.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Buchele, Chas. J., Bluffton, Ind.						
Wheat Middlings	781	4.0	14.0	7.0	Wheat product	
Corn and Oats Rye and Barley Chop.....	788	2.5	9.5	6.0	Corn, oats, rye and barley	
Corn and Wheat Bran.....	788	3.0	10.0	13.0	Corn and wheat product	
Sundy Mill Co., L. L., Vallonia, Ind.						
Mixed Feed	2478	3.8	14.0	11.0	Wheat bran and corn bran	
Wheat Middlings	2479	2.9	13.5	7.0	Wheat product	
Mill Feed	2521	3.4	13.0	10.0	Wheat bran, shorts, screenings and corn bran	
Bunker Hill Milling Co., Evansville, Ind.						
Fancy Shorts	705	4.0	14.0	8.0	Wheat product	
Wheat Bran	706	3.8	14.0	10.0	Wheat product	
Mixed Feed	1171	3.9	14.0	9.0	Wheat product	
Bran, Shipstuff and Screenings.....	2589	3.0	12.0	10.0	Wheat bran, shipstuff and screenings	
Wheat Bran and Screenings.....	2005	3.2	13.5	12.0	Wheat bran and screenings	
Burge Milling Co., Marion, Ind.						
Burge Milling Co.'s Wheat Bran.....	229	3.1	14.0	10.0	Wheat product	
Burge Milling Co.'s Shorts.....	230	4.0	14.0	8.0	Wheat product	
Burge Milling Co.'s Chop.....	231	3.9	9.5	6.0	Corn and oats	
Burge Milling Co.'s Bran and Shorts....	233	3.8	14.0	9.0	Wheat product	
Burk, G. T., Monroe, Ind.						
Corn and Oats Chop.....	1684	3.9	9.5	6.0	Corn and oats	
Burkhart, J. E., Georgetown, Ind.						
Shipstuff	975	3.8	14.0	10.0	Wheat product	
Burrell & Morgan, Elkhart, Ind.						
Bran	253	3.8	14.0	10.0	Wheat product	
Middlings	254	4.0	14.0	7.0	Wheat product	
Chop Feed	255	3.9	9.5	6.0	Corn and oats	
Butler Milling Co., Butler, Ind.						
Butler Milling Co.'s Wheat Bran.....	1020	3.8	14.0	10.0	Wheat product	
Butler Milling Co.'s Wheat Middlings....	1030	4.0	14.0	7.0	Wheat product	
Butler Milling Co.'s Chop Feed.....	1031	3.9	9.5	6.0	Corn and oats	
Cable & Keller, Richmond, Ind.						
Bran	674	3.2	12.0	10.0	Wheat product	
Middlings	675	3.7	14.0	7.0	Wheat product	
Cadick Milling Co., Grandview, Ind.						
Shipstuff	139	4.0	14.0	7.0	Wheat product	
Bran and Screenings	2090	3.8	14.0	10.0	Wheat bran, screenings and corn bran	
Mixed Feed	2100	4.1	14.0	10.0	Wheat product, screenings and corn bran	
Calvert Mills, Trevlac, Ind.						
Bran	1779	3.8	14.0	10.0	Wheat product	
Canaan Milling Co., Canaan, Ind.						
Wheat Bran	1265	3.8	14.0	10.0	Wheat product	
Canaan Wheat Middlings.....	1902	1.5	10.0	7.0	Wheat product	
Canine Bros. Milling Co., Clinton, Ind.						
Wheat Middlings	1875	4.0	14.0	7.0	Wheat product	
Mixed Feed	2331	3.5	14.5	10.0	Wheat bran, shorts, screenings and corn bran	
Canal Elevator Co., Peru, Ind.						
Chop Feed	886	3.2	8.8	9.0	Corn, oats and corn screenings	
Cannelton Flour Mills, The, Cannelton, Ind.						
Mixed Feed	68	4.1	13.7	9.0	Shipstuff, wheat and corn bran	
Mixed Feed	60	3.4	14.4	10.0	Wheat and corn bran	
Ship and Wheat Screenings.....	2580	4.0	14.0	9.0	Wheat product and screenings	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent.	Crude Fat	Not less than per cent.	Crude Protein	
Carlisle Mill & Elevator Co., Carlisle, Ind.						
Wheat Bran	790	3.7	14.0	10.0	Wheat product	
Shipstuff	791	4.5	14.9	8.0	Wheat product	
Carpenter, A. J., Hamilton, Ind.						
A. J. Carpenter's Corn and Oat Chop....	307	3.9	9.5	6.0	Corn and oats	
Carpenter, B. O., Perrysville, Ind.						
"Wheat Middlings"	343	4.0	14.0	7.0	Wheat product	
"Wheat Bran"	344	3.8	14.0	10.0	Wheat product	
Carroll, Simon J., Royal Center, Ind.						
Uncle Simon's Chop Feed.....	815	3.8	9.0	7.0	Corn and oats	
Carter Feed & Coal Co., The, Elwood, Ind.						
Corn and Oats Chop.....	147	3.9	9.5	6.0	Corn and oats	
Catron Bros., Flora, Ind.						
Mixed Feed	2416	3.8	13.5	11.0	Wheat bran, middlings and corn bran	
Corn and Oats Chop.....	2836	3.0	9.0	6.0	Corn and oats	
Cable, O. L., Pekin, Ind.						
Wheat Screenings	1014	3.0	12.0	6.0	Wheat screenings	
Corn Bran	1015	5.0	8.0	13.0	Corn product	
Wheat Shorts	1016	4.0	14.0	8.0	Wheat product	
Mixed Feed	1017	4.0	14.0	9.0	Wheat product	
Wheat Bran	1018	3.8	14.0	10.0	Wheat product	
Cable & Dunlevy, Henryville, Ind.						
Bran	1234	3.8	14.0	10.0	Wheat product	
Mixed Feed	1235	4.3	16.0	8.5	Wheat product	
Wheat Shorts	1236	4.0	14.0	7.4	Wheat product	
Corn Bran	1728	4.0	7.0	13.0	Corn product	
Caughey, L. H., Laketon, Ind.						
Caughey's Wheat Bran.....	1186	3.8	14.0	10.0	Wheat product	
Caughey's Wheat Middlings.....	1187	4.0	14.0	7.0	Wheat product	
Cayuga Milling Co., Cayuga, Ind.						
Cayuga Milling Co.'s Mixed Wheat and Corn Bran and Wheat Shorts.....	418	4.2	12.0	10.0	Wheat bran, shorts and corn bran	
Cayuga Milling Co.'s Mixed Wheat Bran and Wheat Shorts.....	419	3.9	14.0	9.0	Wheat product	
Cayuga Milling Co.'s Wheat Shorts.....	420	4.0	14.0	8.0	Wheat product	
Cayuga Milling Co.'s Wheat Bran.....	421	3.8	14.0	10.0	Wheat product	
Champion Milling Company, Indianapolis, Ind.						
Champion Milling Company's Mixed Feed	947	4.4	15.0	7.0	Wheat product	
Champion Roller Milling Co., Richmond, Ind.						
Wheat Middlings (or Shorts).....	2496	3.7	15.5	7.0	Wheat product	
Wheat Bran	2498	3.5	14.8	10.0	Wheat product	
Chandler, J. H., Metz, Ind.						
Corn and Oats Chop.....	1664	3.9	9.0	6.0	Corn and oats	
Charles & Sons, James, Marion, Ind.						
Chop Feed	224	3.2	8.8	6.0	Corn and oats	
Mixed Feed	1547	4.0	10.0	9.0	Wheat bran, middlings, shorts, screenings and corn bran	
Chelsea Mills, Chelsea, Ind.						
Mixed Feed	1208	3.7	14.0	10.0	Wheat product and mill sweepings	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Cicero Mills & Elevator, Cicero, Ind. Chop Feed	1799	3.7	9.5	6.0		Corn and oats
City Elevator, The, Portland, Ind. Corn and Oats Chop	1885	3.9	9.5	6.0		Corn and oats
City Mills, Huntington, Ind. City Mills' Wheat Middlings	1810	4.0	14.0	7.0		Wheat product
City Mills' Wheat Bran	1811	3.8	14.0	10.0		Wheat product
City Mills Chop Feed	1819	3.9	9.5	6.0		Corn and oats
City Milling Co., Attica, Ind. Wheat Middlings	531	4.0	14.0	7.0		Wheat product
Wheat Bran	539	3.8	14.0	10.0		Wheat product
City Roller Mills, Vevay, Ind. Mixed Feed or Wheat and Corn Product	1158	3.0	14.0	8.3		Wheat and corn product and screenings
Clark Bros., Hagerstown, Ind. Wheat Middlings	2007	3.7	14.0	7.0		Wheat product
Wheat Bran	2609	3.3	13.0	10.0		Wheat product
Clark & Sons, C. G., Rushville, Ind. Clark's Corn and Wheat Bran (Mixed)	135	3.7	14.0	10.7		Corn and wheat product
Clark's Middlings	136	3.9	14.0	7.0		Wheat product
Clark's Corn and Oat Chop	137	3.0	8.0	8.0		Corn and oats
Clark's Wheat Bran	138	3.7	14.0	10.3		Wheat product
Claypole, Geo. M., Sardinia, Ind. Geo. M. Claypole's Mixed Feed	1330	3.5	14.0	12.0		Wheat bran, middlings, screenings and corn bran
Geo. M. Claypole's Wheat Bran	2144	3.3	14.0	10.0		Wheat product
Geo. M. Claypole's Wheat Middlings	2500	4.0	14.0	8.0		Wheat product
Claypole's Chop	2943	3.5	10.0	10.0		Wheat, oats and corn
Clayton, Chas. B., Kingsbury, Ind. Corn and Oats Chop	1406	3.0	9.0	8.0		Corn and oats
Clayton Milling Co., Clayton, Ind. Clayton Wheat Middlings	2114	3.9	14.3	5.0		Wheat product
Mixed Bran	2525	3.7	14.0	12.0		Wheat and corn bran
Clear Creek Roller Mills, Ketcham, Ind. Mill Feed	1241	4.0	15.0	4.0		Wheat bran, shorts, screenings and corn bran
Clement, Geo. J., Chrisney, Ind. Mixed Feed	1113	3.5	12.0	12.0		Wheat and corn product
Wheat Shorts	1113	4.0	14.0	8.0		Wheat product
Coal City Milling Co., Coal City, Ind. Coal City Milling Co. Wheat Shorts	520	4.0	14.0	8.0		Wheat product
Coal City Milling Co. Wheat Bran	521	4.0	14.0	10.0		Wheat product
Coal City Milling Co.'s Chop Feed	2519	3.0	9.0	4.0		Wheat bran, screenings, corn and corn bran
Pure Corn and Oats Chop	2069	3.5	9.5	7.0		Corn and oats
Cohes & Co., A. B., Crawfordsville, Ind. Corn and Oats Chop	2300	3.5	9.5	8.0		Corn and oats
Cold Springs Mill, Hillsborough, Ind. Wheat Bran, Shorts and Corn Bran	2527	3.0	10.0	11.0		Wheat bran, shorts and corn bran
Collier Bros., Culver, Ind. Mixed Feed	1470	5.0	18.0	25.0		Buckwheat product
Wheat Bran	1471	3.3	14.0	10.0		Wheat product
Corn and Oats Chop	1473	3.9	9.5	6.0		Corn and oats
Wheat Middlings	1473	4.0	14.0	7.0		Wheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Orude Fat	Not less than per cent. Orude Protein	Not more than per cent. Orude Fiber	
Colnon, John P., Ridgway, Ill. Colnons Corn and Wheat Bran.....	1940	4.0	11.0	13.0	Corn and wheat bran
Columbia City Mill & Elevator Co., The, Columbia City, Ind. Mixed Bran	2701	3.5	14.0	10.0	Wheat and corn bran
Chop Feed	2708	3.5	9.0	6.0	Corn, oats, rye and barley
Pure Cream Wheat Middlings and Corn Flour	2064	3.0	13.5	8.0	Wheat and corn product
Columbus Milling Co., Columbus, Ind. Mixed Feed	658	3.5	14.0	10.0	Wheat bran and middlings
Corn Bran	653	5.0	8.0	13.0	Corn product
Combs & Son, J., Leiters Ford, Ind. Wheat Bran	230	3.8	14.0	10.0	Wheat product
Brown Middlings	261	4.0	14.0	7.0	Wheat product
Compton Bros., Eagletown, Ind. Bran and Shorts.....	2209	3.8	14.0	9.0	Wheat product
Cook & Boyd, Richmond, Ind. Wheat Middlings	339	3.7	14.0	5.2	Wheat product
Wheat Bran	333	3.7	13.0	10.0	Wheat product
Cook & Co., W. A., Marengo, Ind. Cook's Wheat Bran.....	945	3.7	14.0	10.0	Wheat product
Coombs Milling Co., Wm. A., Coldwater, Mich. Mixed Feed	1690	3.0	15.0	10.0	Wheat product
Wheat Bran	1691	3.0	14.0	10.0	Wheat product
Wheat Middlings	1693	3.0	15.0	9.0	Wheat product
Coppes, Zook & Mutschler Co., Nappanee, Ind. Mixed Feed	2343	3.6	15.0	11.0	Wheat bran and screenings
Middlings	2609	4.7	15.5	7.0	Wheat product
Bran	2610	3.6	13.5	11.0	Wheat product
Corbin Milling Co., New Harmony, Ind. Corbin's Wheat Middlings.....	314	4.0	14.0	7.0	Wheat product
Corbin's Mixed Feed.....	2256	3.9	13.3	7.0	Wheat and corn product and screenings
Corunna Mills, Corunna, Ind. Corn and Oats Chop.....	1613	3.9	9.0	6.0	Corn and oats
Chop Feed	2355	3.5	9.0	13.0	Corn, oats, corn bran and wheat screenings
Bran	2338	3.2	14.0	9.0	Wheat product
Wheat Middlings	2339	3.0	14.0	7.0	Wheat product
Corydon Milling Company, The, Corydon, Ind. The White Mill Wheat Middlings.....	99	4.0	14.0	7.0	Wheat product
The White Mill Wheat Bran.....	100	3.8	14.0	10.0	Wheat product
The White Mill Wheat Screenings.....	101	3.0	13.0	6.0	Wheat screenings
The White Mill Corn Bran.....	102	5.0	8.0	13.0	Corn product
Cox & Cox, Carthage, Ind. Carthage Mixed Feed.....	291	3.5	13.0	8.0	Wheat bran, shorts, screening and corn bran
Crabbs Reynolds Taylor Co., Crawfords- ville, Ind. Chop Feed	1929	3.7	9.0	6.0	Corn and oats
Mixed Feed	2390	3.0	14.0	10.0	Wheat bran and screenings

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Crabbs Reynolds Taylor Co., LaFayette, Ind.						
Corn and Oats Ground.....	786	8.9	9.5	6.0		Corn and oats
Wheat Middlings	2467	4.0	14.0	7.0		Wheat product
Mixed Feed	2468	8.7	14.0	10.0		Wheat bran and screenings
Crabbs Reynolds Taylor Co., Reynolds, Ind.						
Chop Feed	1888	8.9	9.5	6.0		Corn and oats
Crandall, L. W., Fremont, Ind.						
Corn and Oats Chop.....	1650	8.9	9.5	6.0		Corn and oats
Wheat Middlings	1651	4.0	14.0	7.0		Wheat product
Wheat Bran	1652	3.8	14.0	10.0		Wheat product
Crawford, J. S., Crown Point, Ind.						
Corn and Oats Chop.....	2641	3.5	9.0	9.0		Corn and oats
Red Dog Flour.....	2708	2.0	12.0	7.0		Wheat product
Mixed Feed	2707	3.8	14.0	10.0		Wheat product and screenings
Crescent Milling Company, Taylorsville, Ind.						
"Crescent Mill Feed".....	2106	8.5	14.0	8.0		Wheat product
Crocker, William G., Minneapolis, Minn.						
William G. Crocker's Coarse Bran.....	2090	4.0	14.5	11.0		Wheat product
William G. Crocker's Standard Middlings	2091	4.0	15.0	8.0		Wheat product
William G. Crocker's Flour Middlings..	2092	5.0	17.0	6.0		Wheat product
William G. Crocker's Mixed Feed.....	2093	4.5	16.0	9.0		Wheat product
William G. Crocker's Red Dog Flour....	2094	5.0	17.0	4.0		Wheat product
Croxton, James W., Cloverdale, Ind.						
Middlings	246	3.8	14.0	5.0		Wheat product
Bran and Middlings.....	247	3.5	14.2	7.0		Wheat product
Chop Feed	248	3.5	11.0	8.2		Corn and oats
Croxton's Extra Mixed Feed.....	2632	3.5	12.0	12.0		Wheat bran, middlings, screenings and corn bran
Crull, Frank, Mooreland, Ind.						
Mixed Feed	2837	3.7	14.0	12.0		Wheat bran and screenings
Wheat Middlings	2838	3.9	14.0	8.0		Wheat product
Cullom & Son, W. H., Frankfort, Ind.						
Corn and Oats Chop.....	1514	8.9	9.0	9.0		Corn and oats
Culver City Grain & Coal Co., Culver, Ind.						
Mixed Feed	1777	4.0	9.5	6.0		Corn, oats, rye and wheat
Cunningham, C., Terhune, Ind.						
Chop Feed	2298	3.0	9.0	6.0		Corn and oats
Mixed Feed	2299	3.2	10.0	6.0		Wheat and corn
Cunningham, James W., Crothersville, Ind.						
J. W. Cunningham's Mixed Feed.....	557	3.0	10.0	8.0		Wheat bran, shorts and corn bran
Cuy Kendall, Dor, Williamsburg, Ind.						
Cuy Kendall Wheat Bran.....	363	3.8	14.0	10.0		Wheat product
Wheat Shorts	363	4.0	14.0	7.0		Wheat product
Corn and Oats Chop.....	304	3.9	9.5	6.0		Corn and oats
Dague & Company, M. L., Muncie, Ind.						
Dague & Company's Chop Feed.....	1082	3.9	9.5	6.0		Corn and oats
Dally, C. C., Bonneyville, Ind., P. O. Bristol, Ind.						
Mixed Buckwheat Bran and Middlings..	1610	4.0	18.0	20.0		Buckwheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Dair Bros., West Harrison, Ind.						
Dair's Wheat Bran.....	1088	8.8	14.0	10.0		Wheat product
Dair's Chop Feed.....	1089	8.9	9.5	6.0		Corn and oats
Dair's Wheat Middlings.....	1070	4.0	14.0	6.0		Wheat product
Daisy Mills & Elevator of Modoc, Modoc, Ind.						
Mixed Feed	2973	3.9	9.5	10.0		Corn and oats
Daisy Roller Mills, Brookville, Ind.						
Wright's Wheat Bran.....	401	3.7	14.0	10.0		Wheat product
Wright's Wheat Middlings.....	2704	3.4	14.0	10.0		Wheat product
Dalrymple, J. W., Rising Sun, Ind.						
Bran and Shorts.....	810	3.8	14.0	10.0		Wheat product
Daniel, Lewis E., Kewanna, Ind.						
Corn and Oats Chop.....	578	3.9	9.5	6.0		Corn and oats
Daniels & Pickering Co., Middletown, Ind.						
Daniels' Chop Feed.....	108	3.2	9.0	6.0		Corn and oats
Daniels' Wheat Bran.....	104	3.2	12.0	10.0		Wheat product
Daniels' Mixed Feed.....	105	3.5	13.0	8.0		Wheat product
Daniels' Middlings.....	106	3.7	14.0	7.0		Wheat product
Darlington Grist Mill, Darlington, Ind.						
Chop Feed	2361	3.9	9.5	8.0		Corn and oats
Davis & Co., R., Jasonville, Ind.						
R. Davis & Co.'s Chop Feed.....	2866	3.0	12.0	10.0		Corn, oats, wheat bran and screenings
Davis & Johnson, Coatsville, Ind.						
Wheat Middlings	438	3.8	14.4	5.9		Wheat product
Davis & Johnson's Wheat Bran.....	439	3.8	14.1	10.2		Wheat product
Davison, C. F., Pierceton, Ind.						
Reed's Corn and Oats Chop.....	1083	3.9	9.5	6.0		Corn and oats
Davison, Hay & Grain, C. F., Unlondale, Ind.						
Chop Feed	1878	3.0	9.0	7.0		Corn and oats
Mill Feed	1879	3.0	10.0	6.5		Corn, oats and rye
Mixed Feed	1886	3.2	8.8	3.0		Corn, oats and barley
DeBaun Feed Mill, The, Terre Haute, Ind.						
Chop Feed	1604	3.9	9.5	6.0		Corn and oats
Mixed Feed	2226	4.0	10.0	10.0		Wheat bran, screenings, corn and corn bran
Deck, James M., Roann, Ind.						
Corn and Oats Chop Feed.....	194	3.0	9.0	7.0		Corn and oats
Pure Winter Wheat Bran.....	195	3.7	14.0	10.0		Wheat product
Pure Wheat Middlings.....	196	4.0	14.0	7.0		Wheat product
Decker Milling Co., Decker, Ind.						
Mixed Feed	1035	3.0	12.0	11.0		Wheat and corn product
Wheat Shorts	1036	4.0	14.0	8.0		Wheat product
Delaware Mills, The, Albany, Ind.						
Mixed Bran and Middlings.....	1740	2.9	14.0	9.0		Wheat product
Delp, Ettinger & Co., Bourbon, Ind.*						
Bourbon Bran	2423	3.8	14.0	10.0		Wheat product
Bourbon Middlings	2424	4.0	14.0	7.5		Wheat product
Bourbon Chop	2425	3.9	9.5	6.5		Corn and oats
Delp Grain Co., E. E., Bourbon, Ind.						
Bourbon Bran	3089	3.8	14.0	10.0		Wheat product

*Succeeded by E. E. Delp Grain Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Detroit Milling Co., Detroit, Mich.						
Apex Middlings	2752	4.5	15.5	7.0		Wheat product
Adrian Winter Wheat Bran.....	2753	8.5	14.0	10.0		Wheat product
Diamond Roller Mills, Fort Ritner, Ind.						
Holland's Mixed Feed.....	2208	3.8	14.0	6.0		Wheat product
Dietrich & Co., J. R., Bremen, Ind.						
Corn and Oats Chop.....	1460	3.9	9.5	6.0		Corn and oats
Dilger Bros., Mariah Hill, Ind.						
Dilger Bros.' Wheat Shorts.....	32	4.0	14.0	8.0		Wheat product
Dilger Bros.' Wheat Bran.....	33	3.8	14.0	10.0		Wheat product
Dillen, M. T., Frankfort, Ind.						
Corn and Oat Chop.....	2037	3.5	9.0	6.0		Corn and oats
Dilley & Co., C. L., Logansport, Ind.						
Dillys No. 1 Chop.....	525	3.5	9.0	7.0		Corn and oats
Dillsboro Milling Co., Dillsboro, Ind.						
Dillsboro Milling Co. Bran.....	1007	3.8	14.0	10.0		Wheat bran, wheat dust and corn bran
Wheat Shorts	1008	4.0	14.0	8.0		Wheat product
Dix, E. E., Terre Haute, Ind.						
Dix's Chop Feed.....	2222	3.9	9.0	10.0		Oats, wheat and corn bran and hominy meal
Dodd & Son, H. C., Charlestown, Ind.						
Mill Offal	2338	4.0	14.0	9.0		Wheat bran, shorts, middlings and screenings
Doolittle Mills, Doolittle Mills, Ind.						
Shipstuff	2004	3.5	14.0	9.0		Wheat product
Donmeyer, Gardner & Co., Peoria, Ill.						
Pure Wheat Bran	2611	4.0	14.0	10.0		Wheat product
Pure Wheat Middlings.....	2612	4.5	15.0	8.0		Wheat product
Donlin, Wm., Monticello, Ind.						
Donlin's Corn and Oats Chop.....	44	3.9	9.5	6.0		Corn and oats
Dragoo, B. S. & S. H., Yorktown, Ind.						
Mixed Corn and Wheat Bran.....	601	3.7	14.0	10.0		Corn and wheat product
Middlings	2044	2.5	14.0	5.0		Wheat product
Drake, Cils, The Bowling Green Mills, Bowling Green, Ind.						
Wheat Bran	1203	3.8	14.0	10.0		Wheat product
Mixed Feed	1204	3.8	14.0	10.0		Wheat bran, shorts and corn bran
Shipstuff	1205	4.0	14.0	8.0		Wheat product
Dubois Milling Co., Dubois, Ind.						
Bran and Shorts.....	1192	3.6	13.0	10.0		Wheat product
Dusen & Kennedy, Crawfordsville, Ind.						
Corn and Oat Chop.....	879	3.9	9.5	6.0		Corn and oats
Dyer Milling Company, Dyer, Ind.						
Wheat Bran	1255	3.0	14.0	8.0		Wheat product
Rye Middlings	1256	2.0	12.0	4.0		Rye product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Eagle Roller Mill Co., New Ulm, Minn. Coarse Wheat Bran..... Red Dog Superb..... Choice Wheat Middlings.....	2884 2975 2976	4.1 5.3 5.5	14.9 18.9 17.0	9.2 2.7 8.6	Wheat product Wheat product Wheat product	
Eagle Roller Mills, South Boston, Ind. Mixed Feed	2315	3.5	13.0	11.0	Wheat bran and middlings	
Eaton Elevator, Eaton, Ind. Corn and Oats Chop.....	1745	3.0	9.5	6.0	Corn and oats	
Eaton Milling Co., The, Eaton, Ind. Corn and Oats Chop.....	1909	3.9	9.5	6.0	Corn and oats	
Eberts & Bro., Charlestown, Ind. "Bran"..... "Ship Stuff"	2014 2015	3.9 4.5	14.1 15.8	10.0 7.0	Wheat product Wheat product	
Eberts & Bro., Jeffersonville, Ind. "Bran"..... "Mix-Feed"..... "Mix-Feed"..... "Ship Stuff"	243 243 244 245	3.9 4.3 4.3 4.5	14.1 15.3 16.0 15.8	10.0 8.0 7.0 7.0	Wheat product Wheat product Wheat and corn product Wheat product	
Corn Bran	1243	5.0	8.0	13.0	Corn product	
Eberts & Bro., North Vernon, Ind. Mixed Feed	409	3.5	13.5	9.0	Wheat product and screenings	
Eberts' Mix-Feed.....	2652	4.0	15.5	8.0	Wheat product and screenings	
Eckert, J. & A., Jasper, Ind. Wheat Bran and Shorts, Mixed.....	987	4.0	14.0	9.0	Wheat product	
Eckhart Milling Co., B. A., Chicago, Ill. Wheat Bran	2727	3.0	14.0	10.0	Wheat product	
Wheat Middlings	2728	3.0	15.0	8.0	Wheat product	
Eckstein & Co., Chas. P., Peru, Ind. XXXX Chop Feed	1911	2.5	7.5	6.0	Corn and oats	
Eclipse Mill, The, Ramsey, Ind. Mill Feed	2485	3.8	14.0	10.0	Wheat bran and middlings	
Edwardsport Milling Co., Edwardsport, Ind. The Edwardsport Milling Co.'s "Mixed Feed".....	724	3.9	12.4	8.8	Wheat bran, shorts, screenings and corn bran	
Edwardsport Milling Co. Wheat Bran and Shorts Mixed.....	725	3.9	14.0	8.8	Wheat bran and shorts	
Edwardsport Milling Co., wheat Bran.....	726	3.7	14.0	10.0	Wheat product	
Edwardsport Milling Co., Wheat Shorts.....	727	4.0	14.0	8.0	Wheat product	
Oats and Corn Mixed.....	1222	3.9	9.5	6.0	Oats and corn	
Esley & Co., Wm., College Corner, Ohio. Mixed Feed	2020	3.8	13.5	13.0	Wheat bran, screenings and corn bran	
Wheat Middlings	2021	4.0	14.0	7.0	Wheat product	
Egloff Sons, A., St. Meinrad, Ind. Bran and Screenings.....	2501	3.0	14.0	8.5	Wheat bran, screenings and corn bran	
Ellettsville Mill Co., The, Ellettsville, Ind. "A" Mixed Feed.....	2180	3.0	13.0	13.0	Wheat bran, middlings, screenings and corn bran	
Ellis Feed Mill, Hartford City, Ind. Ellis' Corn, Oats and Rye Chop.....	913	3.9	9.5	6.0	Corn, oats and rye	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Ellis Milling Co., The, Elon, Ind. Mixed Feed -----	2829	3.8	14.0	10.0	Wheat bran and shorts
Elnora Milling Co., The, Elnora, Ind. Wheat Bran -----	398	3.1	14.5	11.0	Wheat product
Chop Feed -----	399	8.0	8.0	10.0	Corn and screenings
Wheat Middlings -----	390	3.9	13.0	8.0	Wheat product
Mixed Feed -----	391	8.0	10.0	10.5	Bran and corn
Elysian Milling Co., Janesville, Minn. Wheat Bran -----	2754	3.9	14.0	11.0	Wheat product
Wheat Middlings -----	2755	4.0	14.0	7.0	Wheat product
Emison, J. & S., Vincennes, Ind. Mixed Feed -----	565	4.0	14.0	9.0	Wheat product and screenings
Middlings -----	1598	4.0	14.0	8.0	Wheat product
Emmert, C. B., Clarksburg, Ind.. Wheat Bran -----	737	4.0	15.4	9.0	Wheat product
English Milling Co., English, Ind. English Milling Co., Mixed Feed -----	968	4.0	14.1	9.2	Wheat product, screenings and corn bran
Enos, M. T., New Albany, Ind. Corn Bran -----	2490	5.0	9.0	13.0	Corn bran
Enos & Lee, New Albany, Ind.* Eureka Mixed Feed -----	987	4.0	15.0	7.0	Wheat product
Fancy Middlings -----	989	4.0	16.0	6.0	Wheat product
Enterprise Mill Co., The, Bicknell, Ind. Enterprise Wheat Bran -----	497	3.8	14.0	10.0	Wheat product
Enterprise Wheat Middlings -----	498	4.0	14.0	7.0	Wheat product
Wheat Bran and Corn Bran -----	1188	4.4	11.0	11.5	Wheat and corn product
Wheat Middlings and Wheat Bran -----	1189	3.8	14.0	10.0	Wheat product
Mixed Feed -----	1800	3.5	13.3	10.0	Wheat bran and screenings
Enterprise Milling Co., Milroy, Ind. Bran and Screenings -----	2077	2.9	14.1	10.0	Wheat product and screenings
Middlings -----	2317	3.8	14.2	6.3	Wheat product
Etna Lumber, Grain & Milling Co., Etna Green, Ind. Mixed Feed -----	237	4.0	9.0	8.0	Corn, oats, rye and corn bran
Corn and Oats Chop -----	238	4.0	9.0	6.0	Corn and oats
Winter Wheat Bran -----	239	3.8	14.0	10.0	Wheat product
Winter Wheat Middlings -----	240	4.0	14.0	7.0	Wheat product
Everett, Aughenbaugh & Company, Waseca, Minn. Eaco Bran -----	2801	3.0	14.0	10.0	Wheat product
Eaco Middlings -----	2802	3.0	15.0	8.0	Wheat product
Ewing Mill Co., The, Brownstown, Ind. Ewing Mill Co.'s Wheat Bran -----	297	3.8	14.0	10.0	Wheat product
Wheat Shorts -----	298	4.0	14.0	8.0	Wheat product
Ewing Mill Co., Ewing, Ind. Ewing Mill Co.'s Mixed Feed -----	2497	3.8	14.0	10.0	Wheat bran and shorts
Fairmount Grain Company, The, Fairmount, Ind. "Elijah's Chop" -----	268	3.9	9.5	6.0	Corn and oats

*Succeeded by J. M. Lee.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Farmers Feed Store, Borden, Ind.					
Wheat Bran -----	1093	3.8	14.0	10.0	Wheat product
Wheat Shorts -----	1094	4.0	14.0	8.0	Wheat product
Farmers Mill, The, Huntingburg, Ind.					
Mixed Feed -----	1827	3.8	13.0	13.0	Wheat product, screenings and corn bran
Farmland City Flour Mills, The, Farm-land, Ind.					
Wheat Shorts -----	1636	4.0	14.0	7.0	Wheat product
Wheat Bran -----	1659	3.8	14.0	10.0	Wheat product
Fette, Nicholas H., New Alsace, Ind.					
Fette's Cleaned Wheat Middlings -----	2608	3.2	13.8	7.0	Wheat product
Fette's Cleaned Wheat Bran -----	2604	3.5	14.0	10.0	Wheat product
Fickle Feed Mill, Mulberry, Ind. ⁷					
Chop Feed -----	1510	3.9	9.5	6.0	Corn and oats
Fields, E. S., Owensburg, Ind.					
Mill Run -----	1133	3.5	14.0	10.0	Wheat product
Finch Bros., North Liberty, Ind.					
Corn and Oats Chop -----	1359	3.9	9.0	8.0	Corn and oats
Finkle Bros., Warren, Ind.					
Corn and Oats Chop -----	1198	3.9	9.5	6.0	Corn and oats
Flack Bros., East Chicago, Ind.					
Wheat bran -----	1381	3.5	12.0	12.0	Wheat product
Wheat Middlings -----	1382	3.5	12.0	9.0	Wheat product
Mixed Feed -----	2740	3.5	13.5	12.0	Wheat bran and screenings
Flater, Joda, Alfordsville, Ind.					
Joda Flater Wheat Bran -----	576	3.7	14.0	10.0	Wheat product
Joda Flater Wheat Middlings -----	577	4.0	14.0	7.0	Wheat product
Flat Rock Buhr Mills, Flat Rock, Ind.					
Corn Bran -----	1601	5.0	8.0	13.0	Corn product
C. & O. Chop -----	1602	3.9	9.5	6.0	Corn and oats
Flat Rock Cave Mills, Shelbyville, R. F. D. No. 3, Ind.					
Corn and Oats -----	1349	3.7	9.3	6.5	Corn and oats
Wheat bran -----	1350	3.8	14.0	10.0	Wheat product
Shorts -----	1351	4.0	14.0	8.0	Wheat product
Flinn & Gaunt, Earl Park, Ind.					
Corn and Oats Chop -----	1530	3.9	9.5	6.0	Corn and oats
Fohl, Casper, Cedar Grove, Ind.					
Mixed Feed -----	2580	3.8	14.0	11.0	Wheat bran, screenings and corn bran
Wheat Middlings -----	2581	4.0	14.0	7.0	Wheat product
Follett & Co., R. J., Carmel, Ind.					
Wheat Bran and Corn Bran -----	1980	3.7	11.0	11.5	Wheat and corn bran
Wheat Shorts -----	2136	3.0	14.0	8.0	Wheat product
Forest Co., J. A., Dixon, Ill.					
Wheat Bran -----	2047	3.5	14.0	9.8	Wheat product
Middlings -----	2128	5.0	15.0	6.0	Wheat product
Forest Park Mills, Terre Haute, Ind.					
Wheat Middlings -----	1774	4.0	14.0	7.0	Wheat product
Mixed Feed -----	1775	4.0	9.8	6.0	Wheat bran, corn and corn bran
Wheat Bran -----	1776	3.8	14.0	10.0	Wheat product

⁷Succeeded by Calvin Rutan.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Fornax Roller Mills, Decatur, Ind.						
Fornax Chop	921	4.5	10.0	9.6	Corn and oats	
Fornax Bran	2840	8.7	15.3	9.0	Wheat product	
Fornax Middlings	2841	4.1	15.4	5.3	Wheat product	
Fort Branch Milling Co., Fort Branch, Ind.						
Fort Branch Mill Co., Pure Wheat Bran	566	8.7	14.0	10.0	Wheat product	
Mixed Feed	2165	3.7	14.0	8.0	Wheat product, screenings and corn bran	
Fortville Milling Co., Fortville, Ind.						
Fortville Milling Co.'s Corn and Oats Chop	1230	8.9	9.5	6.0	Corn and oats	
Fortville Milling Co.'s Pure Mixed Feed	1231	3.8	14.0	7.0	Wheat product	
Fortville Milling Co.'s Bran	1232	3.8	14.0	10.0	Wheat product	
Fortville Milling Co.'s Wheat Middlings	1233	4.0	14.0	7.0	Wheat product	
Fortville Dairy Feed	1478	3.5	9.0	6.0	Wheat, corn and oats	
Fourteen Mile Valley Mills, R. F. D. No. 2, Lexington, Ind.						
Mixed Middlings	1300	4.0	14.0	7.0	Wheat product and sweepings	
Mixed Wheat Bran	1301	3.8	14.0	10.0	Wheat product and sweepings	
Mixed Germ Middlings	1302	4.0	14.0	9.0	Wheat product and sweepings	
Fowler, A., Pittsboro, Ind.						
Corn and Oats Chop	2648	3.5	9.0	9.0	Corn and oats	
Fowler & Floyd, Harrodsburg, Ind.						
Fowler & Floyd's Mill Feed	1019	4.3	14.5	9.0	Wheat and corn product	
Fox, Fred B., Tipton, Ind.						
Fox Corn and Oats Chop	665	3.9	9.5	6.0	Corn and oats	
Wheat Bran and Shorts	812	3.7	14.0	10.0	Wheat product	
Frakes, John F., Farmersburg, Ind.						
Chop Feed	1789	4.0	12.0	8.0	Wheat bran, middlings and corn	
Frankton Grain Co., Frankton, Ind.						
Frankton Grain Co.'s Chop	1219	3.9	9.5	6.0	Corn and oats	
Frazier Flour & Feed Store, O. A., Lynn, Ind. ^a						
Corn and Oats Chop	1748	3.9	9.5	6.0	Corn and oats	
Fredericks, Wm. G., Hammond, Ind.						
Corn and Oats Chop	2659	3.5	9.0	13.0	Corn and oats	
Fredricksburg Milling Co., The, Fredricksburg, Ind.						
Wheat Shorts	2280	3.0	13.0	7.0	Wheat product	
Mixed Feed	2281	3.8	14.0	11.0	Wheat product and screenings	
Mill Feed	2797	3.5	12.0	11.0	Wheat bran, screenings and corn bran	
Freed & Mather, Campbellsburg, Ind.						
Mixed Feed	946	3.5	13.5	10.5	Wheat product	
Freelandville Flouring Mill Co., Freelandville, Ind.						
Wheat Bran	2489	3.8	14.0	10.0	Wheat product	
Mixed Feed	2691	4.0	14.1	9.0	Wheat bran, shorts, screenings, corn bran and low grade flour	
Wheat Shorts	2692	4.0	14.0	8.0	Wheat product	
Freemont Flouring Mills, Freemont, Ind.						
Freemont Flouring Mills Wheat Middlings	1635	4.0	14.0	7.0	Wheat product	
Freemont Flouring Mills Chop Feed	1636	3.9	9.5	6.0	Corn and oats	
Freemont Flouring Mills Wheat Bran	1637	3.8	14.0	7.0	Wheat product	

^aParker & Pierson.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Freeport Roller Mills, Freeport, Ind. H. Balting's Composition Feed.....	406	3.8	14.0	10.0		Wheat bran, shorts, middlings, screenings and corn bran
Freetown Milling Co., Freetown, Ind. Wheat Bran	2710	3.7	14.0	10.0		Wheat product
Frick, Noah L., Georgetown, R. F. D. No. 7, Logansport, Ind. Frick's Wheat Bran.....	371	3.8	14.0	10.0		Wheat product
Frick's Corn and Oats Chop.....	372	3.9	9.5	7.0		Corn and oats
Wheat Middlings	327	4.0	14.0	7.0		Wheat product
Friedrich & Son, C. W., Dyer, Ind. Buckwheat Feed	2713	1.7	7.7	30.0		Buckwheat bran and middlings
Rye Feed	2715	2.0	12.0	10.0		Rye bran and middlings
Mixed Feed	2718	3.5	14.0	12.0		Wheat bran, middlings and chaff
Friendship Milling Co., Friendship, Ind. Wheat Bran	959	3.8	14.0	10.0		Wheat product
Shorts	980	4.0	14.0	8.0		Wheat product
Fries, Wingfield S., Greenfield, Ind. Hancock Mill Feed.....	579	3.8	14.0	10.0		Wheat bran, shorts, middlings and corn bran
Oat Chop	580	3.9	9.5	6.0		Corn and oats
Fritch, J. D., Frankfort, Ind. Fritch's Wheat Middlings.....	308	3.8	14.0	7.0		Wheat product
Fritch's Corn and Oat Chop.....	310	3.5	9.5	7.3		Corn and oats
J. D. Fritch's Bran Feed.....	1515	4.0	12.0	11.0		Wheat and corn bran
Fromme & Co., H., Terre Haute, Ind. Wheat Bran	1790	3.4	13.2	11.0		Wheat product
Frye, Joseph, Middletown, R. F. D. No. 2, Ind. Frye's Wheat Bran.....	646	3.3	12.0	10.0		Wheat product
Frye's Wheat Middlings.....	647	3.7	14.0	7.0		Wheat product
Frye's Mixed Feed.....	648	3.5	13.0	8.0		Wheat product
Fuhrer-Ford Milling Co., Mt. Vernon, Ind. Wheat Bran and Screenings.....	2385	3.7	14.0	11.8		Wheat bran and screenings
Mixed Feed—Wheat Bran, Middlings and Screenings.....	2386	3.9	14.0	9.5		Wheat bran, middlings and screenings
Fulton Roller Mills, Fulton, Ind. Corn and Oats Chop.....	551	3.0	8.0	4.8		Corn and oats
Wheat Bran	552	3.3	14.0	10.0		Wheat product
Wheat Middlings	553	4.0	14.0	7.0		Wheat product
Fyke Milling Co., LaGrange, Ind. Wheat Bran	1814	3.8	14.0	10.0		Wheat product
Middlings	1815	3.8	14.0	10.0		Wheat product
Fyke's Chop Feed.....	2134	3.5	9.5	10.0		Corn, oats and corn bran
Gale Milling Company, William, Cumberland, Ind. Wheat Bran	664	3.7	14.0	10.0		Wheat product
Gandy & Co., O., South Whitley, Ind. Wheat Middlings	1474	4.0	14.0	7.0		Wheat product
Wheat Bran	1475	3.8	14.0	10.0		Wheat product
Corn and Oats Chop.....	1476	3.5	9.0	9.0		Corn and oats
Corn Bran	2149	5.0	8.0	13.0		Corn product
Gard, Geo. N., Schererville, Ind. Wheat Middlings	2719	3.9	14.0	7.0		Wheat product
Mixed Feed	2720	3.5	13.5	13.0		Wheat bran and screenings

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Gardner, H. E., Helmer, Ind. Corn and Oats Chop.....	1670	3.9	9.5	6.0	Corn and oats	
Garland Milling Company, The, Greensburg, Ind. Garland Bran.....	197	3.7	14.1	10.0	Wheat product	
Garland Middlings.....	198	3.8	14.2	6.3	Wheat product	
Garland Mixed Feed.....	2382	3.7	14.0	9.0	Wheat product and screenings	
Garland Bran and Screenings.....	2383	3.7	14.1	10.0	Wheat product and screenings	
Garrett & Funk, Liberty Center, Ind. Corn and Oats Chop.....	1560	3.9	9.5	8.0	Corn, oats and corn bran	
Ship Stuff.....	1561	3.8	14.0	10.0	Wheat product	
Gary Grain Company, The, Gary, Ind. Wheat Feed.....	2177	2.4	14.8	5.5	Wheat and oats	
Gary Supply Co., Gary, Ind. Wheat Middlings.....	1379	4.0	14.0	10.0	Wheat product	
Wheat Bran.....	1380	3.5	14.0	10.0	Wheat product	
Corn and Oats Chop.....	2749	3.5	9.0	9.0	Corn and oats	
Mixed Feed.....	2743	3.9	14.0	11.0	Wheat bran and screenings	
Gaskill & Co., C. J., South Bend, Ind. Gaskills Chop Feed.....	603	4.0	9.5	6.0	Corn and oats	
Gaskills Wheat Bran.....	604	4.0	15.0	10.0	Wheat product	
Gaskills Wheat Middlings.....	605	4.5	14.5	7.2	Wheat product	
Gehman, A., Lewis, Ind. Wheat Shorts.....	926	4.0	14.0	8.0	Wheat product	
Corn and Oats Chop.....	927	3.9	9.5	6.0	Corn and oats	
Wheat Bran.....	928	3.8	14.0	10.0	Wheat product	
Geneva Milling & Grain Company, Geneva, Ind. Elzey Chop Feed.....	156	3.9	9.5	6.0	Corn and oats	
Miller's Wheat Bran.....	157	3.8	14.0	10.0	Wheat product	
Adam's Shorts and Middlings.....	158	4.0	14.0	8.0	Wheat product	
Gentryville Roller Mills, Gentryville, Ind. Mixed Feed.....	1849	3.2	14.0	9.0	Wheat product	
Gilman, S. B., Summitville, Ind. Gilman's Wheat Bran.....	543	3.7	14.0	9.5	Wheat product	
Gilman's Corn and Oats Chop.....	2444	3.5	9.0	6.0	Corn, oats and corn bran	
Glen Echo Mills, Indianapolis, Ind. Bower's Chop.....	1068	3.5	8.0	7.0	Corn and oats	
Three in One.....	2562	5.0	11.0	11.0	Wheat bran, middlings, hominy feed and oats	
Corn Bran.....	2623	5.0	9.0	13.0	Corn bran	
Globe Mills, The, Fort Wayne, Ind. The Globe Mills Wheat Bran.....	425	3.8	14.0	10.0	Wheat product	
The Globe Mills Wheat Shorts.....	426	4.0	14.0	8.0	Wheat product	
The Globe Mills Corn and Oats Chop.....	427	3.9	9.5	6.0	Corn and oats	
Goodland Feed Store, F. P. Morton, Proprietor, Goodland, Ind. Rye and Oats Chop.....	2083	1.7	9.5	6.0	Rye and oats	
Goodrich Bros. Hay & Grain Co., Winchester, Ind. "Climax Chop".....	2293	3.5	9.5	6.0	Corn, oats, rye and wheat screenings	
Gordon & Son, Summitville, Ind. Corn and Oats Chop.....	1545	3.9	9.5	6.0	Corn and oats	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain					and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber			
Goshen Milling Company, The, Goshen, Ind.							
Middlings -----	65	4.1	14.5	4.8	Wheat product		
Bran -----	66	3.7	15.4	9.5	Wheat product		
Chop Feed -----	67	3.2	10.5	4.8	Corn and oats		
Mixed Bran -----	1594	3.8	14.0	11.0	Wheat and corn bran		
Mixed Feed -----	2335	4.0	14.0	11.0	Wheat product and screenings		
Gosport Roller Mills, Gosport, Ind.							
Mixed Feed -----	1167	2.6	9.5	7.5	Wheat bran, shorts, screenings and corn bran		
Gotto, O. W., Michigan City, Ind.							
Wheat Bran -----	1283	3.5	14.0	11.0	Wheat product		
Corn and Oats Chop -----	1284	3.5	9.0	6.0	Corn and oats		
Wheat and Rye Middlings -----	1285	3.0	15.0	7.0	Wheat and rye product		
Graft Bros., Winchester, Ind.							
Graft Bros. Wheat Middlings -----	1181	4.0	14.0	7.0	Wheat product		
Graft Bros. Wheat Bran -----	1182	3.8	14.0	10.0	Wheat product		
Graft Bros. Chop Feed -----	1183	3.9	9.5	6.0	Corn and oats		
Bran and Middlings -----	2029	4.0	14.0	10.0	Wheat product		
Graston G. W., Dupont, Ind.							
Bran and Screenings -----	1104	3.8	14.0	10.0	Wheat product and screenings		
Mixed Feed -----	1289	3.8	14.0	10.0	Wheat product		
Cereal Bran -----	1750	3.8	8.0	13.0	Wheat and corn product		
Gray, Hugh, Rushville, Ind.							
Grays Chop -----	693	3.9	9.5	10.0	Corn and oats		
Grays Wheat Bran -----	694	3.8	14.0	10.0	Wheat product		
Grays Wheat Middlings -----	695	4.0	14.0	10.0	Wheat product		
Gray & Whitestine, Huntington, Ind.							
Gray & Whitestine's Chop -----	1034	3.9	9.5	6.0	Corn and oats		
Greenfield Mills, Greenfield Mills, Ind.							
Mixed Feed -----	2412	4.0	14.0	10.0	Wheat bran and middlings		
Greenwood Elevator Co., Greenwood, Ind.							
Ground Wheat Screenings -----	2599	2.5	10.0	7.0	Wheat screenings		
Gregory, Franklin S., Washington, Ind.							
Oats and Corn Chop -----	876	3.9	9.5	6.0	Corn and oats		
Griffin and Dix, Terre Haute, Ind.							
Chop -----	893	3.9	9.0	5.0	Wheat bran, corn and oats		
Grim, Loyd, Springport, Ind.							
Grims Wheat Middlings -----	351	3.7	14.0	7.0	Wheat product		
Grims Corn and Oat Feed -----	352	3.3	9.0	6.0	Corn and oats		
Grims Bran and Screenings -----	353	3.3	12.0	10.0	Wheat bran, screenings and corn bran		
Grim, Wm. H., Indianapolis, Ind.							
Grim's Mixed Feed -----	1551	5.5	11.0	11.0	Wheat and corn product		
Wheat Bran -----	1552	3.8	14.0	10.0	Wheat product		
Grimes Milling Co., Leavenworth, Ind.							
Grimes Mixed Feed -----	2511	3.4	14.5	10.0	Wheat bran, middlings, shorts, screenings and corn bran		
Gross, L. J., Sandborn, Ind.							
Mixed Feed -----	2911	3.2	13.0	12.0	Wheat bran, screenings and corn bran		
Guyatt, Wm., Knox, Ind.							
Guyatt Chop Oats and Corn -----	26	3.9	9.5	6.0	Corn, oats and corn bran		
Wheat Bran -----	27	3.8	14.0	10.0	Wheat product		
Wheat Middlings -----	28	4.0	14.0	7.0	Wheat product		

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Guyatt & Son, Wm., Knox, Ind. Guyatt's Buckwheat Middlings.....	2834	6.9	27.0	5.0		Buckwheat product
Habig Bros., Indianapolis, Ind. Habig's Mixed Feed.....	2520	4.5	11.5	8.5		Wheat bran, corn bran, hominy feed, feed meal and linseed meal
Hall Milling Co., W. C., Brazil, Ind. Hall's Wheat Bran.....	419	3.8	14.0	10.0		Wheat product
Hall's Wheat Shorts.....	581	4.0	14.0	8.0		Wheat product
Hampton, W. D., Worthington, Ind. Wheat Bran.....	1124	3.3	14.0	10.0		Wheat product
Mixed Feed.....	1788	3.3	11.0	5.0		Wheat, corn and screenings
Wheat Shorts.....	2220	2.3	12.8	8.0		Wheat product
Hancock & Adams, Redkey, Ind. Corn and Oats Chop.....	1603	3.9	9.5	6.0		Corn and oats
Hanna, L. G., Logansport, Ind. L. G. Hanna's Chop Feed.....	394	3.7	10.1	7.0		Corn and oats
Hanover Mills, Hanover, Ind. Wheat Bran.....	1280	3.7	14.0	10.0		Wheat product.
Hanover Star Milling Co., Germantown, Ill. Hanover Star Milling Co., Winter Wheat Bran.....	743	3.7	14.0	10.0		Wheat product
Hanover Star Milling Co. Wheat Middlings.....	744	5.0	15.4	5.0		Wheat product
Hanson, Robt., Michigan City, R. F. D. No. 1, Ind. Corn and Oats Chop.....	465	3.0	9.0	7.0		Corn and oats
Wheat and Rye Middlings.....	466	3.0	13.0	17.0		Wheat and rye products
Wheat and Rye Bran.....	467	3.0	13.0	10.0		Wheat and rye products
Hanson Bros., La Otto, Ind. Hanson Bros. Wheat Middlings.....	623	4.0	14.0	7.0		Wheat product
Hanson Bros. Wheat Bran.....	629	3.8	14.0	10.0		Wheat product
Corn and Oats Chop.....	1492	3.9	9.5	6.0		Corn and oats
Harbeck, Wm., Valparaiso, Ind. Corn and Oats Chop.....	1407	3.5	9.0	9.0		Corn and oats
Wheat Bran.....	1408	3.8	14.0	10.0		Wheat product
Red Dog Flour.....	1409	2.0	16.0	1.7		Wheat product
Wheat Middlings.....	1410	4.0	14.0	7.0		Wheat product
Hardinsburg Milling Co., Hardinsburg, Ind. Hardinsburg Milling Co.'s Wheat Bran..	422	3.7	14.0	10.0		Wheat product
Wheat Shorts.....	2263	3.5	13.0	8.0		Wheat product
Hardin & Son, Ladoga, Ind. Hardin & Sons' Mill Feed.....	490	3.7	14.0	10.0		Wheat bran, shorts, middlings, flour and corn bran
Hargrave Bros., Russellville, Ind. Wheat, Corn, Oats and Rye.....	875	4.3	9.0	2.0		Wheat, corn, oats and rye
Harmon & Wallace, Owensville, Ind. Royal Wheat Feed.....	499	3.8	14.0	10.0		Wheat bran, middlings and cleanings
Harris, J. C., Montgomery, Ind. Mixed Feed.....	804	3.6	13.0	13.0		Wheat middlings and corn bran
Wheat Bran and Screenings.....	805	3.6	14.0	10.0		Wheat bran and screenings

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Harris Milling Co., Greencastle, Ind.						
Harris' Chop Feed.....	210	4.1	10.3	7.7	Corn, oats and corn bran	
Harris' Middlings.....	211	3.6	14.5	7.5	Wheat product	
Harris' Mixed Feed.....	212	3.5	14.1	10.0	Wheat product and screenings	
Hartford City Grain & Milling Company, Hartford City, Ind.						
"Cooleys Corn and Oat Chop".....	340	3.9	9.5	6.0	Corn and oats	
"Cooleys Wheat Bran and Middlings Mixed".....	341	3.7	14.0	10.0	Wheat product	
Cooley's Mixed Feed.....	2371	3.0	12.0	11.0	Wheat product and screenings	
Hartman & Sons, Louis, New Albany, Ind.						
Hartman's Warranted Pure Wheat Shorts	835	4.7	15.8	7.9	Wheat product	
Hartman's Shipstuff.....	836	4.3	16.5	6.8	Wheat product	
Mixed Feed.....	1979	3.5	14.0	10.0	Wheat product and screenings	
Harvest City Mills, R. F. D. No. 22, Edinburg, Ind.						
Mixed Feed.....	2563	3.5	13.5	12.0	Wheat bran, middlings and corn bran	
Havens, P. W., Hartford City, Ind.						
Corn and Oats Chop.....	2845	3.5	9.0	6.0	Corn and oats	
Hawes, J. J., Memphis, Ind.						
J. J. Hawes Wheat Middlings.....	1049	4.0	14.0	8.0	Wheat product	
Wheat Middlings and Wheat Bran Mixed Feed.....	1050	4.2	15.8	8.0	Wheat product	
J. J. Hawes Wheat Bran.....	1051	3.9	14.0	10.0	Wheat product	
Hawk Bros. Milling Co., Mongo, Ind.						
Middlings.....	1818	3.8	14.0	10.0	Wheat product	
Wheat Bran.....	1819	3.8	14.0	10.0	Wheat product	
Hawk Bros. Chop Feed.....	1820	3.9	9.5	6.0	Corn and oats	
Hawkins Bros., Oxford, Ind.						
Elevator Chop Feed.....	1905	3.9	9.0	10.0	Corn and oats	
Hawkins Bros., Chalmers, Ind.						
Chop Feed.....	2475	3.5	9.2	6.0	Corn and oats	
Hawk & Wisman, Angola, Ind.						
Hawk & Wisman's Wheat Bran.....	1073	3.8	14.0	10.0	Wheat product	
Hawk & Wisman's Wheat Middlings.....	1079	4.0	14.0	7.0	Wheat product	
Hawk & Wisman's Corn and Oat Chop.....	1080	3.9	9.5	6.0	Corn and oats	
Hay, Henry, Churubusco, Ind.						
Middlings.....	1867	4.0	14.0	7.0	Wheat product	
Bran.....	1868	3.8	14.0	10.0	Wheat product	
Corn and Oats Chop.....	1869	3.7	9.5	10.0	Corn, oats and wheat screenings	
Hayes & Piercy, Kokomo, Ind.						
Bran and Middlings.....	175	3.9	14.0	9.0	Wheat product	
Chop Feed.....	176	3.0	9.0	8.0	Corn and oats	
Haynes Milling Co., The, Portland, Ind.						
Wheat Middlings.....	91	4.0	14.0	7.0	Wheat product	
Wheat Bran.....	92	3.7	14.0	10.0	Wheat product	
Corn and Oats Chop Feed.....	93	3.9	9.5	6.0	Corn and oats	
Corn Bran.....	1384	5.0	8.0	12.0	Corn product	
Bran.....	1584	3.8	15.2	9.0	Wheat and corn product	
Haysville Milling Company, Haysville, Ind.						
Haysville Milling Company's Wheat Shorts.....	846	4.0	14.0	8.0	Wheat product	
Haysville Milling Company's Wheat Bran.....	847	3.7	14.0	10.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain					and to be composed of the following ingredients
		Not less than per cent.	Crude Fat	Not less than per cent.	Crude Protein	Not more than per cent.	
Hazelton Milling Co., The, Hazelton, Ind.							
Standard Wheat Shorts.....	771	4.0	14.0	8.0	Wheat product		
Acme Mixed Bran	772	3.8	11.7	9.4	Wheat and corn product		
Heaton & Co., E. H., Indianapolis, Ind.							
Chop	739	3.9	9.5	6.0	Corn and oats		
Wheat Bran	740	3.7	14.0	10.0	Wheat product		
Heckman, Charles, Decatur, Ind.							
Wheat Bran	942	3.8	14.0	9.0	Wheat product		
Chop Feed	943	3.9	9.5	6.0	Corn and oats		
Wheat Middlings	944	4.0	14.0	7.0	Wheat product		
Helmsath, John F., Napoleon, Ind.							
Enterprise Wheat Bran and Screenings..	690	3.7	14.1	12.0	Wheat product and screenings		
Enterprise Middlings	697	3.8	14.2	8.0	Wheat product		
Helmsath, John F., Milan, Ind.							
Wheat Middlings	698	3.8	14.2	8.0	Wheat product		
Wheat Bran	699	3.7	14.1	10.0	Wheat product		
Helse Bros. & Co., Orleans, Ind.							
Wheat Screenings	939	3.0	12.0	6.0	Wheat screenings		
Shipstuf	940	4.0	14.0	7.0	Wheat product		
Wheat Bran	941	3.8	14.0	10.0	Wheat product		
Mixed Feed	2865	3.4	12.5	10.0	Wheat bran, screenings and corn bran		
Helse Milling Co., Madison, Ind.							
Helse's Wheat and Corn Bran.....	848	4.2	12.0	11.0	Wheat and corn products		
Helse's Wheat Bran	849	3.8	14.0	10.0	Wheat product		
Helse's Ship-stuff	850	4.0	14.0	8.0	Wheat product		
Heltschmidt, A. C., Michigan City, Ind.							
Wheat Bran	1326	3.8	14.0	10.0	Wheat product		
Heltschmidt's Chop Feed.....	1719	4.2	9.0	3.5	Corn and oats		
Middlings	2046	4.0	14.0	7.0	Wheat product		
Hendrick & Sons, Tangier, Ind.							
Wheat Bran and Shorts.....	569	3.8	14.0	10.0	Wheat product		
Hendry & Bassett, Angola, Ind.							
Wheat Bran	1685	3.8	14.0	10.0	Wheat product		
Wheat Middlings	1686	4.0	14.0	7.0	Wheat product		
Corn and Oats Chop	1687	3.5	9.0	6.0	Corn and oats		
Hennepin Mill Co., Minneapolis, Minn.							
Hennepin Mill Co.'s Ben-Hur Coarse Bran	730	4.0	15.0	10.0	Wheat product		
Hennepin Mill Co.'s Ben-Hur Standard Middlings	723	4.0	16.0	8.0	Wheat product		
Hennepin Mill Co.'s Ben-Hur Flour Middlings	733	5.0	17.0	6.0	Wheat product		
Hennepin Mill Co.'s Ben-Hur Red Dog	736	5.0	18.0	4.0	Wheat product		
Henry Company, The, Terre Haute, Ind.							
Henry's Wheat Bran.....	2698	4.0	15.0	9.0	Wheat product		
Hering Co., J., Shelbyville, Ind.							
Bran	828	4.0	13.0	7.0	Wheat product		
Shorts	829	4.0	12.0	5.0	Wheat product		
Hermann, S. C., Muncie, Ind.							
"Hermann's Chop Feed".....	595	3.5	9.5	10.0	Corn, oats and rye		
Hermann & Co., J. G., Indianapolis, Ind.							
Hermann's Choice Mill Feed.....	2087	4.0	15.0	8.0	Wheat product		
Hermann's Choice Bran	2089	3.8	14.0	10.0	Wheat product		
Hermann's Choice Middlings	2422	4.0	14.0	7.0	Wheat product		

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Hibbitts Mill Company, Muncie, Ind.						
Shipstuff	523	4.0	14.0	8.0		Wheat product
Wheat Bran	529	3.8	14.0	10.0		Wheat product
Corn and Oat Chop	530	3.9	9.5	6.0		Corn and oats
Hibbitts Mixed Feed	1458	3.7	9.5	5.0		Wheat, corn, oats and rye
Mixed Feed	2335	3.0	14.0	13.0		Wheat bran, screenings and corn bran
Corn Bran	2929	5.0	9.0	13.0		Corn product
Hibbitts Horse Feed	2930	3.9	10.0	9.0		Corn, oats and wheat bran
High Street Feed Mills, Roanoke, Ind.						
Corn and Oats Chop	1717	3.0	9.0	6.0		Corn and oats
High Street Milling Co., Muncie, Ind.						
High Street Milling Company's Wheat Bran	976	4.0	15.4	9.0		Wheat product
High Street Milling Company's Shorts	977	4.5	14.9	7.4		Wheat product
High Street Milling Company's Chop Feed	978	3.9	9.5	6.0		Corn and oats
Corn Bran	2783	5.0	9.0	14.0		Corn product
Hilands & Co., R. P., Bainbridge, Ind.						
Hilands Shorts	563	4.0	14.0	8.0		Wheat product
Hilands Wheat Bran	564	3.8	14.0	10.0		Wheat product
Hilands Mixed Feed	2785	3.5	14.0	10.0		Wheat bran, middlings and wheat screenings
Hildebrand, Chas. L., Elizabeth, Ind.						
Hildebrand's Wheat Bran and Middlings	1263	3.7	14.0	10.0		Wheat product
Hill, Peter, Sandborn, Ind.*						
Wheat Shorts	614	4.5	14.9	7.4		Wheat product
Wheat Bran	2494	3.0	14.0	9.0		Wheat product
Hill, Thomas J., South Bend, Ind.						
Thos. J. Hills Corn and Oats Chop	979	3.0	9.0	6.0		Corn and oats
Wheat Middlings	980	4.0	14.0	7.0		Wheat product
Wheat Bran	981	3.8	14.0	10.0		Wheat product
Hills, H. B., Freemont, Ind.						
Wheat Bran	1653	3.8	14.0	10.0		Wheat product
Wheat Middlings	1654	4.0	14.0	7.0		Wheat product
Hinshaw & Johnson, Westfield, Ind.						
Corn and Oats Chop	1391	3.9	9.5	6.0		Corn and oats
Hires, William, Alexandria, Ind.						
Hires' Chop Feed	821	4.0	11.5	5.0		Corn, oats and wheat product
Holdaway Co., W. L., Terre Haute, Ind.						
Chop Feed	384	3.7	14.0	10.0		Corn, oats, corn bran, wheat screenings
Mixed Feed	2195	3.8	14.0	11.0		Wheat bran and screenings
Holdaway's Horse Feed	2196	3.9	9.0	8.0		Wheat bran, corn bran, corn and oats
Wheat Bran	2482	3.0	13.0	4.0		Wheat product
Holland Mills, The, Holland, Ind.						
Bran	2154	3.5	13.0	10.0		Wheat product
Middlings	2155	3.5	13.0	7.0		Wheat product
Mill Run Feed	2339	3.5	13.0	9.0		Wheat bran and middlings
Hollett-Winders Grain Co., The, Arcadia, Ind.						
Corn and Oats Chop	1826	3.9	9.5	6.0		Corn and oats

*Succeeded by L. F. Gross.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Holliday & Son, John, Greentown, Ind., (Mill Burned).					
Corn and Oats Chop.....	1581	3.9	9.5	6.0	Corn and oats
Wheat Bran	1582	3.8	14.0	10.0	Wheat product
Wheat Shorts	1583	4.0	14.0	8.0	Wheat product
Hollingsworth, S. P., Russiaville, Ind.					
Corn and Oats Chop.....	1518	3.9	9.0	9.0	Corn and oats
Hollingsworth's Bran Feed.....	1519	3.8	13.0	11.0	Wheat and corn products
Hollingsworth's Wheat Shorts.....	2941	2.5	13.0	7.0	Wheat product
Holmes Bros., Portland, Ind.					
Corn and Oats Chop.....	1726	3.9	9.5	6.0	Corn and oats
Holser & Co., B. I., Walkerton, Ind.					
Corn and Oats Chop.....	1452	3.9	9.0	9.0	Corn and oats
Holton Milling Co., Holton, Ind.					
Wheat Bran	463	3.7	14.0	10.0	Wheat product
Wheat Shorts	464	4.0	14.0	8.0	Wheat product
Mixed Feed	1828	4.0	11.0	10.0	Wheat bran, shorts, screenings and corn bran
Home Mill & Grain Co., Mt. Vernon, Ind.					
Home Mill & Grain Co.'s Wheat Shipstuff	690	5.6	17.8	6.5	Wheat product
Mixed Feed	2241	3.9	14.4	10.5	Wheat bran and screenings
Corn Bran	2508	5.0	8.0	13.0	Corn bran
Hoodlemler, Howard C., Auburn, Ind.					
Corn and Oats Chop.....	1568	3.8	9.0	7.0	Corn and oats
Hornung, J. M., Greensburg, Ind.					
Wheat Bran	417	3.7	14.1	9.7	Wheat product
Chop Feed	2576	4.9	10.0	11.0	Corn, oats and corn bran
Wheat Bran and Screenings.....	2577	3.7	14.1	11.0	Wheat product and screenings
Middlings	415	3.8	14.2	9.7	Wheat product
Mixed Feed	416	3.7	14.0	9.7	Wheat product
Hosler, Arthur J., Argos, Ind.					
Chop Feed	307	3.9	9.5	6.0	Corn and oats
Mixed Feed	308	3.8	14.0	10.0	Wheat product
Hosmer, Otis I., Doolittle Mills, Ind.					
Otis I. Hosmer Wheat Bran.....	1529	3.7	14.0	10.0	Wheat product
Hostetter, J. A., Peru, Ind.					
XXXX Chop Feed.....	2471	2.5	7.5	9.0	Corn and oats
Houck & Knox, Converse, Ind.					
Mixed Feed	2310	3.5	13.0	8.0	Wheat product
Chop Feed	2311	3.9	9.0	6.0	Corn, oats and corn bran
Hubbard & Co., W. H., Monrovia, Ind.					
Chop	992	4.0	10.0	6.0	Corn and oats
Shorts	993	5.0	14.0	7.0	Wheat product
Bran	994	4.0	13.0	10.0	Wheat and corn product
Huber & Schultz, Poland, Ind.					
Bran	895	3.8	14.0	10.0	Wheat product
Mixed Feed	896	4.0	13.0	10.0	Wheat and corn products
Hufnagle & Gentner, Kewanna, Ind.					
Ground Corn and Oats.....	1798	3.9	9.5	6.0	Corn and oats
Hufnagle & Miller, Redkey, Ind.					
Corn and Oats Chop.....	1804	3.9	9.5	6.0	Corn and oats
Huffy & Yeoman, Newton, Ind.					
Corn and Oat Chop.....	2781	3.5	9.0	10.0	Corn and oats ground

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain					and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber			
Hughes Lumber & Grain Co., Brooklyn, Ind. Chop Feed	2806	2.5	9.0	15.0	Corn, corn bran and wheat screenings		
Hull Flour and Feed Store, C. F., North Vernon, Ind. Corn and Oats Chop.....	1140	3.8	9.0	6.0	Corn and oats		
Humphreys Feed Mill, Pierceton, Ind. Chop Feed	2151	3.5	9.5	8.0	Corn and oats		
Hunsicker & Bender, Bluffton, Ind. Chop Feed	452	2.0	8.0	5.0	Corn, oats, barley and rye		
Mixed Bran	1858	4.0	14.0	11.0	Wheat and corn product		
"A. Wheat Shorts".....	1559	4.0	14.0	8.0	Wheat product		
Hunter Bros. Milling Co., St. Louis, Mo. Pure Wheat Bran.....	381	3.5	14.0	10.0	Wheat product		
Pure Wheat Middlings.....	383	4.0	16.0	10.0	Wheat product		
Pure Wheat Mixed Feed or Mill Run....	384	4.0	15.0	10.0	Wheat product		
Huntington Mill Co., Huntington, Ind. Bran	491	3.6	14.2	10.0	Wheat product		
Mixed Feed	492	3.8	13.5	6.4	Wheat bran, shorts, screenings and corn bran		
Bran and Shorts.....	493	3.9	14.2	9.5	Wheat product		
Chop Feed	494	3.7	11.0	6.7	Corn and oats		
Shorts	495	3.9	14.3	5.4	Wheat product		
Hutchinson Mill Co., Hutchinson, Kansas. Bran	2000	4.0	15.5	10.0	Wheat product		
Shorts	2001	5.0	19.7	8.0	Wheat product		
Igleheart Bros., Evansville, Ind. Igleheart's Bulk Middlings.....	112	4.0	15.0	5.0	Wheat product		
Mixed Feed	649	4.6	16.1	7.0	Bran and shipstuff		
Bran and Screenings.....	2279	4.0	15.0	10.0	Wheat product and screenings		
Imperial Mills, The, D. Z. Creitz, Proprietor, Cambridge City, Ind. Wheat Bran	250	3.2	12.0	10.0	Wheat product		
Wheat Middlings	280	3.7	14.0	7.0	Wheat product		
Mixed Bran	1752	3.2	12.0	11.0	Wheat and corn product		
Indiana Milling Co., Terre Haute, Ind. Wheat Middlings	2694	4.0	14.0	7.0	Wheat product		
Wheat Bran	2695	3.8	14.0	10.0	Wheat product		
Inglefield Mill Co., Inglefield, Ind. Inglefield Shorts	1588	4.5	14.9	7.4	Wheat product		
Inglefield Mixed Feed.....	2327	3.7	14.0	9.0	Wheat bran, shipstuff and screenings		
Ingraham & Son, F. P., Albion, Ind. Corn and Oats Chop.....	1683	3.9	9.5	6.0	Corn and oats		
Jacobson, Soren, Young America, Ind. Jacobsons Wheat Middlings.....	385	4.0	14.0	7.0	Wheat product		
Jacobsons Wheat Bran.....	386	3.8	14.0	10.0	Wheat product		
Jacobsons Wheat and Corn Bran.....	2718	3.8	14.0	11.0	Wheat and corn bran		
Janes, Frank E., Indianapolis, Ind. Corn and Oats Chop.....	2160	3.5	9.0	10.0	Corn and oats		
Jay Grain Co., The, Elwood Branch, St. Marys, Ohio. Jay's Chop Feed.....	2886	3.8	9.0	7.0	Corn, oats and wheat screenings		

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients	
		Not less than per cent.	Crude Fat	Not less than per cent.	Crude Protein		
					Not more than per cent.	Crude Fiber	
Jay Grain Co., The, Mulberry Branch, Mulberry, Ind.							
Jay's Corn Bran.....	37	5.0	8.0	13.0			Corn product
Jay's Wheat Bran and Shorts.....	38	4.0	14.0	7.0			Wheat product
Jay Grain Co., The, St. Marys, Ohio.							
New Chop Feed.....	1720	3.5	9.5	7.0			Corn, oats and wheat screenings
Jenkins & Cohee, Whitestown, Ind.							
Chop Feed.....	2210	3.6	9.5	8.0			Corn, oats and corn bran
Jessup, Nevins & Co., Bloomingdale, Ind.							
Shorts.....	1052	4.0	14.0	8.0			Wheat product
Bran.....	1054	3.7	14.0	10.0			Wheat product, screenings and corn bran
Millfeed.....	2254	3.7	14.0	10.0			Wheat product, screenings and corn bran
Jessup, Nevins & Co., Klugman, Ind. ¹⁰							
Shorts.....	1055	4.0	14.0	8.0			Wheat product
Millfeed.....	1056	4.0	14.0	10.0			Wheat product, screenings and corn bran
Bran.....	1057	3.7	14.0	10.0			Wheat product, screenings and corn bran
Johnson, Manson, Frankfort, Ind.							
Johnson's Chop Feed.....	2804	3.5	9.0	6.0			Corn and oats
Johnston, C. H., R. R. No. 7, LaPorte, Ind.							
Corn and Oats Chop.....	1267	3.9	9.0	6.0			Corn and oats
Jones, W. E., Tocsin, Ind.							
Jones' Corn and Oats Chop.....	742	3.9	9.5	6.0			Corn and oats
Jones Bros., Attica, Ind.							
Corn and Oats Chop.....	2732	3.0	9.0	6.0			Corn and oats
Jones & Long, Wabash, Ind.							
Wheat Bran.....	479	3.8	14.0	10.0			Wheat product
Wheat Middlings.....	480	4.0	14.0	8.0			Wheat product
Corn and Oat Chop.....	481	3.9	9.5	6.0			Corn meal, corn bran and oats
Jordan & Gossard, Kempton, Ind.							
Bran and Middlings.....	2025	3.5	14.0	9.0			Wheat product
Kamman, Frank W., Cross Plains, Ind.							
Shipstuff or Shorts.....	2359	4.0	14.0	8.0			Wheat product
Bran.....	2360	3.8	14.0	10.0			Wheat product
Karnes, Lubert, Martinsburg, Ind.							
Red Wing Dairy Feed.....	527	3.8	14.0	10.0			Wheat product
Katterjohn, Aug. F., Lynnville, Ind.							
Katterjohn's Wheat Middlings.....	487	3.7	14.0	10.0			Wheat product
A. F. Katterjohn's Wheat Bran.....	1957	4.0	14.0	7.0			Wheat product
Katterjohn, Q. F., Boonville, Ind.							
Wheat Shorts.....	1089	4.0	14.0	8.0			Wheat product
Katterjohn's Mixed Feed.....	2243	4.0	13.5	11.0			Wheat product, screenings and corn bran
Keene, A. C., Elkhart, Ind.							
A. C. Keene's Wheat Bran.....	1223	3.8	14.0	10.0			Wheat product
A. C. Keene's Wheat Middlings.....	1224	4.0	14.0	7.0			Wheat product
A. C. Keene's Chop Feed.....	1225	3.9	9.5	6.0			Corn and oats
Keesler Milling Co., St. Joe, Ind.							
Keesler's Chop Feed.....	1120	3.9	9.5	6.0			Corn and oats

¹⁰Succeeded by The Kingman Grain & Milling Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent.	Crude Fat	Not less than per cent.	Crude Protein	
Keesler Milling Co., St. Joe, Ind.						
Keesler's Wheat Middlings.....	1121	4.0	14.0	7.0		Wheat product
Keesler's Wheat Bran.....	1122	3.8	14.0	10.0		Wheat product
Keesler's Mixed Bran.....	2064	3.8	14.0	10.0		Wheat and corn product
Kehlor Flour Mills Co., St. Louis, Mo.						
Kehlor's MIN Feed.....	985	4.0	14.0	10.0		Wheat product
Kell, C. H., Indianapolis, Ind.						
Wheat Bran.....	1798	3.7	14.0	10.0		Wheat product
Kellman Co., The L., Dyer, Ind.						
Corn and Oats Chop.....	2493	3.9	9.5	6.0		Corn and oats
Wheat Bran.....	2669	3.5	14.0	10.0		Wheat product
Wheat Middlings.....	2700	4.0	14.0	8.0		Wheat product
Kellman Kimmet Co., The, Lowell, Ind.						
Buckwheat Bran.....	1371	3.0	12.0	33.0		Buckwheat product
Wheat Middlings.....	1372	3.5	12.0	10.0		Wheat product
Wheat Bran.....	1373	3.5	12.0	12.0		Wheat product
Corn and Oats Chop.....	1374	3.5	9.0	9.0		Corn and oats
Kemper Mill & Elevator Co., Kansas City, Mo.						
Anchor Bran.....	2053	4.0	14.5	9.5		Wheat product
Rainbow Mixed Feed.....	2054	4.0	14.5	9.5		Wheat product
Crown Shorts.....	2055	4.7	16.0	5.7		Wheat product
Carnation Shorts.....	2056	4.3	16.0	6.0		Wheat product
Crescent Shorts.....	2075	4.2	16.0	8.0		Wheat product
Diamond Bran.....	2076	4.0	14.5	9.5		Wheat product
Kennedy & Co., L. C., Center Point, Ind.						
Bran.....	423	3.7	14.0	10.0		Wheat product
Ship.....	424	3.7	14.0	10.0		Wheat product
Mixed Feed.....	1160	3.5	13.5	10.0		Wheat bran, shorts, screenings and corn bran
Kennedy Milling Co., The Geo. W., Shelbyville, Ind.						
Middlings.....	2110	3.5	13.5	8.0		Wheat product
Bran.....	2387	3.5	13.5	11.0		Wheat product
Mixed Feed.....	2477	3.5	13.5	12.0		Wheat bran, screenings, and corn bran
Kent Milling Co., Kent, Ind.						
Wheat Bran.....	1296	3.8	14.0	10.0		Wheat product
Ship Stuff.....	1297	4.0	14.0	7.0		Wheat product
Keplinger, Chas., Zanesville, Ind.						
Middlings.....	842	4.0	14.0	5.0		Wheat product
Bran.....	843	4.0	14.0	9.0		Wheat product
Chop Feed.....	844	4.0	10.0	5.0		Corn and oats
Kern & Son, A. J., Trinity Springs, Ind.						
Trinity Brand.....	813	3.8	14.0	8.1		Wheat product
Kidder & Co., F. L., Paris, Ill.						
Peerless Feed.....	2450	4.5	10.5	5.0		Corn and wheat bran
Kidwell & Goode, Elwood, Ind.						
Kidwell & Goode's No. 3 Standard Wheat Middlings.....	21	4.0	14.0	7.0		Wheat product
Kidwell & Goode's Standard Wheat Bran.....	22	3.7	14.0	10.0		Wheat product
Kidwell & Goode's Standard Oat and Corn Chop Feed.....	23	3.9	9.5	6.0		Oats and corn
Star Bran.....	1572	3.7	12.0	12.0		Wheat and corn bran
Klewit & Frederick, West Harrison, Ind.						
Klewit & Frederick's Wheat Middlings.....	472	3.9	14.0	6.0		Wheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Kiewit & Frederick, West Harrison, Ind. Kiewit & Frederick's Bran and Screenings	473	3.7	14.0	9.0	Wheat product, screenings and corn bran	
Kill-Ruck Mills, The, Anderson, Ind. Corn Bran	1739	5.0	9.0	13.0	Corn product	
Killian Elevator, The, Newberry, Ind. Mixed Feed	1196	3.5	8.5	8.0	Corn, wheat, screenings and corn bran	
Corn and Oat Chop	1197	3.5	9.0	6.5	Corn and oats	
Kimble & Son, H. C., Brookville, Ind. Kimble's Bran and Middlings	1275	5.3	13.0	8.1	Wheat product	
Kincade, James W., Orangeville, Ind. Corn and Oats Chop	1686	3.9	9.5	6.0	Corn and oats	
Wheat Bran	1687	3.8	14.0	10.0	Wheat product	
Wheat Middlings	1688	4.0	14.0	7.0	Wheat product	
Kingman Grain & Milling Co., Kingman, Ind. Millfeed	2900	4.0	14.0	10.0	Wheat product, screenings, corn bran and mill sweepings	
Kinsey Bros., Mentone, Ind. Corn and Oats Chop	1996	3.5	9.5	8.0	Corn, oats and wheat screenings	
Shorts	1997	4.0	14.0	8.0	Wheat product	
Mixed Feed	2345	3.8	13.0	13.0	Wheat bran, screenings and corn bran	
Kirklin Grain Company, Kirklin, Ind. Bran and Shorts	1266	3.8	14.0	10.0	Wheat product	
Klemm, Geo. J., Attica, Ind. Mixed Bran	2516	3.5	14.0	10.0	Wheat bran, screenings and corn bran	
Wheat Middlings	2517	3.4	14.0	8.0	Wheat product	
Mixed Feed	2518	3.4	14.0	10.0	Wheat bran, middlings, screenings and corn bran	
Klondike Milling Company, The, Danville, Ind. Wheat Bran	274	3.7	14.4	10.0	Wheat product	
Wheat Middlings	2653	3.5	13.5	7.0	Wheat product	
The Mill Run Mixed Feed	2654	3.5	13.0	13.0	Wheat bran, middlings, screenings and corn bran	
Knoblock & Ginz Milling Co., South Bend, Ind. Wheat Middlings	1023	4.0	14.0	7.0	Wheat product	
Wheat Bran	1025	3.8	14.0	10.0	Wheat product	
Wheat and Rye Bran	1527	2.5	14.0	10.0	Wheat and rye product	
Buckwheat Bran	2342	3.0	7.0	27.0	Buckwheat product	
A. Corn and Oats Chop	2733	3.9	9.5	7.0	Corn, oats and corn bran	
Mixed Feed	2739	3.8	14.0	12.0	Wheat bran and screenings	
Koenemann, Ed. F., Hoagland, Ind. Corn & Oats Chop	1683	3.9	9.5	6.0	Corn and oats	
Koontz, Samuel, Walkerton, Ind. Mixed Bran	1900	2.5	14.0	10.0	Wheat bran and rye bran	
Krackenberger, Jake, West Terre Haute, Ind. Corn Bran	814	5.3	9.0	12.7	Corn product	
Kriwitz Bros., Kendallville, Ind. Kriwitz Bros. Wheat Middlings	1041	5.0	15.4	5.0	Wheat product	
Kriwitz Bros. Chop Feed	1042	3.8	9.4	6.0	Corn and oats	
Kriwitz Wheat Bran	1043	3.8	14.0	10.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Krome & Co., H. H., Batesville, Ind.						
Krome's Wheat Bran	163	3.8	14.0	10.0		Wheat product
Krome's Middlings	164	4.0	14.0	7.0		Wheat product
Krome's Mixed Feed	2173	3.5	13.5	10.0		Wheat bran, screenings, corn meal and mill sweepings
Krueger, Chas., LaPorte, Ind.						
Corn and Oats Chop	1288	3.9	9.0	9.0		Corn and oats
Kuhn, R. A., Argos, Ind.						
Wheat Bran	2171	3.8	14.0	10.0		Wheat product
Wheat Middlings	2172	4.0	14.0	7.0		Wheat product
Kuhn & Co., John H., Michigan City, Ind.						
Corn and Oat Chop	1643	3.9	9.5	6.0		Corn and oats
Wheat Bran	1643	3.0	14.0	10.0		Wheat product
Wheat Middlings	1644	3.0	15.0	8.0		Wheat product
Chop Feed	1985	3.5	8.8	10.0		Corn and oats
LaDue & Carmer, Auburn, Ind.						
LaDue & Carmer's Chop Feed	1156	3.9	9.5	6.0		Corn and oats
LaFayette Hominy Mill Co., The, LaFayette, Ind.						
Wheat Bran	2201	3.7	14.0	10.0		Wheat product
Wheat Middlings	2202	4.0	14.0	7.0		Wheat product
LaFayette Milling Co., The, LaFayette, Ind.						
Middlings	116	4.0	14.0	6.0		Wheat product
Mixed Bran	117	4.0	14.0	10.0		Wheat and corn product
LaPorte Milling Co., LaPorte, Ind.						
Wheat Bran	2635	3.8	14.0	10.0		Wheat product
Wheat Middlings	2668	4.0	14.0	7.0		Wheat product
Chop Feed	2769	3.9	9.5	6.0		Corn and oats
LaRue, F. T., Bloomington, Ind.						
Mixed Feed	2205	3.8	14.0	12.0		Wheat bran and screenings
Lash Flour Mills, Fred B., Farmersburg, Ind.						
Lash's Shorts	997	4.0	14.0	8.0		Wheat product.
Lash's Mixed Bran	998	3.7	11.7	11.0		Wheat and corn product
Chop Feed	1780	3.5	11.0	5.0		Corn, oats and screenings
Lathrop & Rardin, Brazil, Ind.						
Mixed Feed	2010	4.0	10.0	6.0		Oats, corn chop, hominy feed and wheat bran
Lawrenceburg Roller Mills Co., The, Lawrenceburg, Ind.						
"Snowflake" Middlings	11	5.1	16.0	7.0		Wheat product.
Snowflake Bran and Screenings	2274	3.8	14.2	9.5		Wheat product and screenings
Snowflake Mixed Feed	2275	4.3	15.2	8.0		Wheat product and screenings
Lawson, John T., Spencer, Ind.						
Lawson's Mixed Feed	2979	3.5	14.0	8.0		Wheat bran, shorts, oats and corn
Laubscher, Wm. F., Evansville, Ind.						
Ship Stuff	2649	2.0	8.0	10.0		Wheat product
Bran	2650	2.0	3.0	10.0		Wheat product
Leach & Co., E. R., Sullivan, Ind.						
Chop Feed	1155	4.3	10.3	5.8		Corn, oats, wheat and corn bran
Leesburg Grain & Milling Co., The, Leesburg, Ind.						
Chop	304	3.9	9.5	6.0		Corn and oats
Wheat Bran	305	3.8	14.0	10.0		Wheat product
Middlings	306	4.0	14.0	7.0		Wheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Lemon, C. M., Redford, Ind. Mixed Mill Feed.....	213	4.5	11.0	12.0	Wheat and corn product	
Corn and Oats Chop.....	214	4.0	8.5	6.0	Corn and oats	
Lewis Milling Co., Lewis, Ind. Wheat Bran	540	3.8	14.0	10.0	Wheat product	
Wheat Shorts	541	4.0	14.0	8.0	Wheat product	
Lewisport Mill Co., Lewisport, Ky. "Farmers Choice"	2377	4.2	14.0	7.0	Wheat middlings and corn bran	
"Mixed Feed"	2378	4.0	14.0	8.0	Wheat bran, middlings, screenings and corn bran	
Ligonier Milling Co., Ligonier, Ind. Ligonier's Milling Co.'s Corn and Oats Chop	379	3.9	9.5	6.0	Corn and oats	
Ligonier Milling Co.'s Wheat Bran.....	379	3.8	14.0	10.0	Wheat product	
Ligonier Milling Co.'s Wheat Middling.....	380	4.0	14.0	7.0	Wheat product	
Mixed Feed	2853	3.8	14.0	11.0	Wheat bran and screenings	
Lindauer, Ferd, Fulda, Ind. Wheat Shorts	1085	4.0	14.0	8.0	Wheat product	
Wheat Bran	1086	3.8	14.0	10.0	Wheat product	
Lindsey, A., Marion, R. F. D. No. 4, Ind. Mixed Feed	2301	3.8	13.1	9.0	Wheat bran and middlings	
Chop Feed	2302	3.1	9.1	6.1	Corn and oats	
Lingeman & Adams, Brownsburg, Ind. Bran	1499	3.8	14.0	10.0	Wheat product	
Ship Stuff	1500	4.0	14.0	8.0	Wheat product	
Imperial Bran	1750	3.9	14.0	13.0	Wheat and corn product	
Linkhart & Son, North Vernon, Ind. Corn and Oats Chop.....	404	3.0	9.5	6.0	Corn and oats	
Linton Mill Co., The, Linton, Ind. Corn and Oat Chop.....	506	3.9	9.5	6.0	Corn and oats	
Wheat Shorts	507	4.0	14.0	8.0	Wheat product	
Wheat Bran	508	3.8	14.0	10.0	Wheat product	
Bran and Shorts.....	509	4.0	14.0	9.0	Wheat product	
Mixed Feed	1792	4.0	13.0	11.0	Wheat product and corn bran	
Little Crow Milling Co., Warsaw, Ind. Little Crow Chop Feed.....	359	3.9	9.5	6.0	Corn and oats	
Little Crow Wheat Bran.....	360	3.8	14.0	10.0	Wheat product	
Little Crow Wheat Middlings.....	361	4.0	14.0	7.0	Wheat product	
Livonia Flouring Mills, Livonia, Ind. Wheat Shorts	2267	4.0	14.0	7.0	Wheat product	
Mixed Feed	2268	3.8	14.0	12.0	Wheat bran, screenings and corn bran	
Lockridge & Ashby, Roachdale, Ind. Corn Bran	2350	5.0	9.0	13.0	Corn bran	
Long, John C., Long's Mill, R. F. D. No. 2, Chesterton, Ind. Wheat Middlings	1496	4.0	14.0	7.0	Wheat product	
Wheat Bran	1496	3.8	14.0	10.0	Wheat product	
Loogootee Milling Co., Loogootee, Ind. Bran	1837	3.2	14.0	10.0	Wheat product	
Shorts	1838	3.8	14.0	8.0	Wheat product	
Mixed Feed	1839	3.5	10.0	9.0	Wheat bran, corn, corn bran and oats	
Dairy Mixed Feed.....	1840	3.6	14.0	9.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Loughry Bros. Milling & Grain Co., Monticello, Ind.						
Loughry's Wheat Bran.....	39	3.7	14.0	10.0	Wheat product	
Loughry's Wheat Middlings.....	40	4.0	14.0	7.0	Wheat product	
Loughry's Corn and Oats Chop.....	41	3.7	9.5	6.0	Corn and oats	
Loughry's Buckwheat Middlings.....	43	6.9	27.0	5.0	Buckwheat product	
Loughry's Wheat Screenings.....	43	3.0	13.0	6.0	Wheat screenings	
Loughry's Buckwheat Bran.....	1039	3.0	13.0	33.0	Buckwheat product	
Mixed Feed.....	2402	3.3	11.0	10.0	Wheat bran, screenings and corn bran	
Loughry's Corn Bran.....	2549	4.0	7.0	11.0	Corn product	
Loughry's Mixed Feed.....	1946	3.7	14.0	10.0	Wheat bran and screenings	
Louisville Cereal Mill Co., Louisville, Ky.						
Nonesuch Mixed Feed.....	2661	7.3	11.6	6.5	Wheat bran and hominy meal	
Loving, J. M., Indianapolis, Ind.						
Mixed Bran and Middlings.....	1541	3.3	14.0	10.0	Wheat product	
Lutz, W. C., Bunker Hill, Ind.						
Mill Feed.....	1765	3.9	9.5	6.0	Corn and oats	
Lynn Elevator & Coal Co., The, Lynn, Ind.						
Corn and Oats Chop.....	1716	3.9	9.5	6.0	Corn and oats	
Lynn Mill & Elevator Co., Lynn, Ind.						
Wheat Shorts.....	1936	3.5	13.0	8.0	Wheat product	
Wheat Bran.....	1937	3.5	13.5	10.0	Wheat product	
Lyons Mills, Lyons, Ind.						
Mixed Feed.....	1535	3.9	14.0	9.0	Wheat product	
Lyons Mill & Elevator Co., Lyons, Ind.						
Reliable Wheat Bran.....	573	3.7	14.0	10.0	Wheat product	
Lyons Roller Mills, Lyons, Ind.						
Mixed Feed.....	2376	3.3	10.0	11.0	Wheat and corn product	
Chop Feed.....	2333	3.0	9.5	6.0	Corn, oats and wheat screenings	
Macy Milling Co., Macy, Ind.						
Mixed Feed.....	709	3.3	14.0	8.6	Bran and middlings	
Wheat Bran.....	710	3.7	14.0	10.0	Wheat product	
Wheat Middlings.....	711	3.9	14.1	7.0	Wheat product	
Chop Feed.....	712	3.7	11.0	7.0	Corn and oats	
Maines & Hamilton, Rensselaer, Ind.						
No. 1 Chop Feed.....	1355	3.9	9.5	5.0	Corn and oats	
Magill & Son, Portland, Ind.						
Corn and Oats Chop.....	1703	3.9	9.5	8.0	Corn and oats	
Maginot Bros., Hammond, Ind.						
Corn and Oats Chop.....	2356	3.5	9.0	9.0	Corn and oats	
Wheat Middlings.....	2357	4.0	14.0	7.0	Wheat product	
Mixed Feed.....	2741	3.9	14.0	12.0	Wheat bran and screenings	
Maney Milling Company, Omaha, Neb.						
Wheat Bran.....	2995	3.3	14.0	11.0	Wheat product	
Wheat Shorts.....	2993	4.0	14.0	8.0	Wheat product	
Manja, Chas., Kingsbury, Ind.						
Wheat Bran.....	1313	3.3	14.0	10.0	Wheat product	
Mixed Shorts.....	2341	3.3	12.2	7.5	Wheat product	
Marco Mill, Marco, Ind.						
Eureka Feed.....	1134	3.5	14.0	9.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Marengo Milling Co., Marengo, Ind. Mixed Feed -----	2080	8.7	13.5	12.0	Wheat bran, middlings and corn bran
Markland Roller Mills, Markland, Ind. Mixed Feed -----	1200	8.8	14.0	10.0	Wheat product
Markle, O. H., Clay City, Ind. Bran and Shorts -----	1159	8.8	14.0	9.5	Wheat product
Martin, J. C. F., North Manchester, Ind. Corn and Oats Chop -----	1880	8.9	9.5	9.0	Corn, oats and screenings
Martin & Co., T. C., LaFayette, Ind. Bran and Shorts -----	589	8.8	14.0	10.0	Wheat product
Corn and Oat Hull Chop -----	590	8.1	8.2	7.5	Hominy feed, light oats and oat hulls
Martin, Martin & Co., New Castle, Ind. Martin, Martin & Co.'s Corn Bran -----	217	4.5	7.5	18.0	Corn bran
Martin, Martin & Co.'s Mixed Feed -----	218	8.5	13.0	6.0	Wheat product
Martin, Martin & Co.'s Wheat Bran -----	219	8.2	12.0	10.0	Wheat product
Martin, Martin & Co.'s Wheat Middlings -----	220	8.7	14.0	10.0	Wheat product
Martin, Martin & Co.'s Corn and Oat Chop -----	221	8.2	9.0	6.0	Corn and oats
Martin Produce Co., West LaFayette, Ind. Mixed Bran -----	448	8.0	13.0	10.0	Wheat product
Shorts -----	444	8.0	13.0	8.0	Wheat product
Ground Corn and Oats -----	447	8.0	9.0	5.0	Corn and oats
Mixed Feed -----	2063	8.0	13.0	12.0	Wheat bran, screenings and corn bran
Martinsville Milling Co., The, Martinsville, Ind. Wheat Shorts -----	29	4.0	14.0	8.0	Wheat product.
Mixed Feed -----	80	4.0	12.0	8.0	Wheat and corn product
Wheat Bran -----	81	8.0	14.0	11.0	Wheat product
Matthew Milling Co., Mitchell, Ind. Matthews Banner Mixed Feed -----	544	8.8	12.5	7.5	Wheat and corn product
Maxville Roller Mills, Maxville, R. F. D. No. 15, Farmland, Ind. Wheat Bran -----	1724	8.8	14.0	10.0	Wheat product
Wheat Shorts -----	1725	4.0	14.0	7.0	Wheat product
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Chop Feed -----	449	8.9	9.5	6.0	Corn and oats
Mayflower Mills Wheat Bran -----	450	8.8	14.0	10.0	Wheat product
Mayflower Mills Wheat Middlings -----	451	4.0	14.0	7.0	Wheat product
Mead Grain Co., Union City, Ind. Corn and Oats Chop -----	787	8.0	9.0	7.4	Corn and oats
Wheat Middlings -----	911	4.0	14.0	8.0	Wheat product
Wheat Bran -----	912	8.7	14.0	10.0	Wheat product
Means & Witt, Lebanon, Ind. Corn and Oats Chop -----	83	3.9	9.5	9.5	Corn and oats
Wheat Shorts -----	84	4.0	14.0	10.0	Wheat product
Wheat Bran -----	85	8.5	14.0	10.0	Wheat product
Mixed Feed -----	86	8.5	8.0	13.0	Wheat product and corn bran
Medaryville Milling Company, Medaryville, Ind. Medaryville Wheat Bran -----	171	8.8	14.0	10.0	Wheat product
Medaryville Wheat Shorts and Middlings -----	173	4.0	14.0	7.5	Wheat product
Medaryville Corn and Oat Chop -----	174	8.9	9.5	6.0	Corn and oats

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Medora Mill Co., Medora, Ind. Medora Mixed Feed ----- Fancy Mixed Feed -----	520 1324	3.6 4.1	14.0 14.0	8.0 8.0	Wheat product and screenings Wheat product, screenings and feed meal
Meek & Son, R. S., Greensburg, Ind. Meek's Chop Feed -----	1240	3.9	9.5	6.0	Corn and oats
Melrose Milling Co., Evansville, Ind. "A" Mixed Feed -----	2378	3.8	13.5	11.0	Wheat product and corn bran
Metamora Roller Mills, The, Metamora, Ind. Wheat Bran ----- Wheat Bran and Corn Bran -----	1605 1606	4.0 4.0	14.0 14.5	10.0 9.0	Wheat product Wheat and corn product
Mexico Milling Company, The, Mexico, Ind. ¹¹ Chop Feed ----- Wheat Middlings ----- Wheat Bran -----	143 143 144	3.9 4.0 3.8	9.5 14.0 14.0	6.0 7.0 10.0	Corn and oats Wheat product Wheat product
Meyers, Jacob, Chili, Ind. White Middlings ----- Germ Middlings ----- Bran ----- Chop Feed -----	1143 1144 1145 1146	4.0 3.4 4.0 3.3	16.1 15.0 16.0 9.0	8.0 9.0 10.0 10.0	Wheat product Wheat product Wheat product Wheat, corn, oats and rye
Mid Continent Mills, Topeka, Kansas. Winter Wheat Bran ----- Winter Wheat Shorts -----	1820 1841	4.0 4.0	15.0 15.0	8.0 8.0	Wheat product Wheat product
Middlebury Milling Co., Middlebury, Ind. Wheat Bran ----- Wheat Middlings ----- Corn and Oat Chop ----- Mixed Buckwheat Bran and Middlings -----	631 632 633 1603	3.8 4.0 4.9 5.0	14.0 14.0 10.5 16.0	10.0 8.0 4.0 20.0	Wheat product Wheat product Corn and oats Buckwheat product
Miesenhelder Bros., Sullivan, Ind. Wheat Middlings ----- Wheat Bran ----- Mixed Feed -----	858 859 874	5.0 4.0 4.1	15.4 15.4 10.8	5.0 9.0 9.4	Wheat product Wheat product Wheat product and corn bran
Millark Mills, Millark, Ind. Corn and Oats Chop -----	1881	3.9	9.5	8.0	Corn and oats
Miller's Elevator, Williamsport, Ind. Corn and Oats Chop -----	1797	3.9	9.5	6.0	Corn and oats
Miller Flour & Feed Co., The Wesley, South Bend, Ind. Wheat Middlings ----- Mixed Feed -----	2846 2847	4.0 3.8	14.0 14.0	7.0 12.0	Wheat product Wheat bran, screenings and corn bran
Miller and Walker, Flora, Ind. Corn and Oats Chop -----	708	3.8	9.0	7.0	Corn and oats
Millgrove Mills, The, Devore, Ind. Mixed Feed -----	1751	3.0	12.0	8.0	Wheat product and screenings
Millhousen Milling Company, Millhousen, Ind. Herbert's Mixed Feed -----	1729	4.0	14.0	7.0	Wheat bran, middlings, shorts and corn bran
Millon, Floyd, Burnettsville, Ind. Corn and Oats Chop -----	1956	3.9	9.5	6.0	Corn and oats

¹¹Succeeded by J. H. Thompson & Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Milltown Milling Co., Milltown, Ind. Milltown Milling Co.'s Millfeed.....	2224	3.7	14.0	10.0	Corn, wheat bran, middlings and screenings	
Model Milling Co., Tecumseh, Neb. Model Milling Co.'s Bran and Shorts.....	1915	4.0	15.0	10.0	Wheat product	
Monroe Grain, Hay & Milling Co., Monroe, Ind. Corn and Oats Chop.....	2188	3.5	9.0	6.0	Corn and oats	
Wheat Middlings	2189	4.0	14.0	7.0	Wheat product	
Wheat Bran	2190	3.8	14.0	10.0	Wheat product	
Montpelier Milling Co., Montpelier, Ind. ¹² Wheat Bran and Shorts Mixed.....	1163	3.0	13.0	12.0	Wheat product	
Wheat Bran	1164	3.0	13.0	13.0	Wheat product	
Wheat Shorts or Middlings.....	1165	3.0	13.0	13.0	Wheat product	
Chop	1166	3.0	9.0	12.0	Corn and oats	
Chop Feed	1212	3.0	10.0	10.0	Corn, oats and screenings	
Moon, Grant, Denver, Ind. Corn and Oats Chop.....	2750	3.5	9.0	9.0	Corn and oats	
Moor, George W., Letts, Ind. George W. Moor's Mill Feed.....	2738	2.0	13.5	6.0	Low grade wheat and wheat screenings	
Moore Milling Co., The R. P., Princeton, Ind. R. P. Moore Mfg. Co.'s King Feed.....	332	3.7	14.0	9.0	Wheat bran and middlings	
Corn Bran	966	5.0	8.0	13.0	Corn product	
The King Mixed Feed.....	2870	3.7	14.0	9.0	Wheat bran, middlings and screenings	
Morgan & Bro., C. D., Mexico, Ind. Chop Feed	2122	3.5	9.0	6.0	Corn and oats	
Morgantown Milling Co., Morgantown, Ind. Wheat Bran	1303	3.7	14.0	10.5	Wheat product	
Corn Bran	1305	4.8	8.0	14.0	Corn product	
Morgantown Milling Co., Mahalasville, Ind. Wheat Shorts	2064	3.0	10.0	8.0	Wheat product	
Morning Star Mill, Somerville, Ind. Mixed Feed	2005	3.0	13.0	10.0	Wheat product and screenings	
Middlings	2006	3.5	13.0	8.0	Wheat product	
Morning Star Mill, Evansville, Ind. Corn Bran and Mill Run.....	2167	3.0	8.0	13.0	Corn bran and corn screenings	
Morrison, Finch & Co., Hillsboro, Ind. Mixed Feed	1139	3.0	9.0	6.0	Corn and oats	
Morristown Milling Co., Morristown, Ind. Morristown Milling Co.'s Wheat Bran.....	624	3.7	14.0	8.0	Wheat product	
Mixed Feed	1923	3.0	14.0	8.0	Wheat and corn bran	
Corn Bran	2614	5.0	9.0	13.0	Corn bran	
Morocco Feed & Grist Mill, Morocco, Ind. Corn and Oats Chop.....	2130	3.3	9.9	6.0	Corn and oats	
Moscow Roller Mills, Moscow, Ind. Wheat Middlings	1633	3.8	14.3	3.8	Wheat product	
Wheat Bran	1634	3.7	14.1	7.0	Wheat product	

¹²Succeeded by Montpelier Mill Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Moss Island Roller Mills, Anderson, Ind.						
Corn and Oats Chop.....	1483	3.7	9.5	6.0		Corn and oats
Wheat Middlings.....	1484	4.0	14.0	7.0		Wheat product
Mixed Feed.....	1485	3.9	14.0	9.0		Wheat product
Mountz, T. J., Angola, Ind.						
Corn and Oats Chop.....	1638	3.9	9.5	6.0		Corn and oats
Montoux Bros., Evansville, Ind.						
Wheat Bran.....	133	3.8	14.0	10.0		Wheat product
Wheat Shorts.....	134	4.0	14.0	8.0		Wheat product
Mixed Feed.....	1974	3.5	13.5	15.0		Wheat bran and screenings
Moyer, W. H., Cory, Ind.						
W. H. Moyer's Mixed Chop.....	1150	3.0	13.0	6.0		Corn, oats, wheat bran, ship-stuff, screenings and corn bran
Moyer's Ship.....	2675	2.5	11.5	7.0		Wheat product
Wheat Bran and Screenings.....	2708	3.5	14.0	10.0		Wheat bran and screenings
Mulberry Feed Mill, Mulberry, Ind.						
Corn Bran.....	2255	5.0	9.0	13.0		Corn product
Mull Grain Co., The, Morristown, Ind.						
Corn Bran.....	2615	5.0	9.0	13.0		Corn bran
Muller & Sons, Peter, Ferdinand, Ind.						
Wheat Shorts.....	644	4.0	14.0	8.0		Wheat product
Wheat Bran.....	645	3.7	14.0	10.0		Wheat product
Wheat Bran, Corn Bran and Screenings.....	2587	3.5	14.0	10.0		Wheat bran, screenings and corn bran
Muncie Feed & Seed Co., Muncie, Ind.						
Snell's Chop Feed.....	925	3.5	9.5	10.0		Corn, oats and rye
Murray Bros., Spencerville, Ind.						
Corn and Oats Chop.....	608	3.9	9.5	6.0		Corn and oats
Wheat Bran.....	609	3.8	14.0	10.0		Wheat product
Middlings and Shorts Mixed.....	610	4.0	14.0	8.0		Wheat product
Myers & Bro. Milling Co., T. C., Epsom, Ind.						
Ship.....	1846	4.0	14.0	7.0		Wheat product
Corn and Wheat Screenings.....	1847	3.5	10.3	8.0		Corn and wheat screenings
Wheat Bran.....	1848	3.8	14.0	10.0		Wheat product
Mixed Feed.....	2023	3.5	12.5	13.0		Wheat bran and middlings
Myers & Hartsock, Wilmot, Ind. ¹³						
Wheat Bran.....	1579	3.8	14.0	10.0		Wheat product
Wheat Shorts.....	1580	4.0	14.0	8.0		Wheat product
Mystic Milling Company, Sioux City, Iowa.						
Mystic Middlings.....	1398	3.0	17.0	3.0		Wheat product
Mystic Bran.....	1399	6.0	14.0	15.0		Wheat product
McBane & Witt, Thorntown, Ind.						
Wonder Feed.....	2766	4.0	12.0	11.0		Wheat bran, middlings and corn bran
McCann Roller Mills, Connersville, Ind.						
Corn Bran.....	2043	5.0	9.0	13.0		Corn product
Wheat Middlings.....	2460	3.7	14.0	7.0		Wheat product
Wheat Bran.....	2461	3.2	13.0	10.0		Wheat product
McComas & Hornbeck, Rossville, Ind.						
Chop Feed.....	2613	3.5	9.5	8.0		Corn and oats

¹³Succeeded by L. H. Scott.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Grude Fat	Not less than per cent. Grude Protein	Not more than per cent. Grude Fiber		
McComas Bros.' Milling Co., Greenwood, Ind. Wheat Shorts -----	870	4.5	14.9	7.4		Wheat product
Wheat Bran -----	871	4.0	15.4	9.0		Wheat product
McCoy, F. C., Orleans, Ind. Mixed Feed -----	2304	3.5	13.0	11.0		Wheat product and screenings
McCoy, R. A., Greensburg, Ind. Mix Feed -----	1875	3.8	11.6	7.0		Wheat bran and corn meal
McCoy's Chop Feed -----	3043	3.5	9.0	12.0		Corn, oats, corn bran and screenings
McCoy Bros., Liberty, Ind. Mixed Wheat Bran -----	180	3.5	14.3	11.4		Wheat bran, screenings, chaf and corn bran
Wheat Middlings -----	169	3.8	15.1	5.0		Wheat product
Wheat Bran -----	1422	3.5	14.3	11.5		Wheat product
Mixed Feed -----	2436	3.5	15.0	8.0		Wheat bran, middlings and corn bran
McCoy & Co., H. W., Lake P. O., Ind. H. W. McCoy & Co.'s Mixed Feed -----	2223	3.9	13.3	10.0		Wheat product and corn bran
McDill Milling Co., The, College Corner, Ind. ¹⁴ McDill's Pure Wheat Bran -----	433	3.3	14.0	10.0		Wheat product
McDill's Pure Wheat Middlings -----	433	3.7	14.0	7.0		Wheat product
McDougle, T., Avilla, Ind. Corn and Oats Chop -----	1622	3.9	9.5	6.0		Corn and oats
McFadden, F. P., Plymouth, Ind. Wheat Bran -----	1433	3.8	14.0	10.0		Wheat product
Corn and Oats Chop -----	1434	3.9	9.5	6.0		Corn and oats
Wheat Middlings -----	1435	4.0	14.0	7.0		Wheat product
McFadden & Co., D. G., Ridgeville, Ind. Corn and Oats Chop -----	1806	3.9	9.5	7.0		Corn, oats and wheat screenings
McKenzie Cereal Food & Milling Co., Quincy, Mich. McKensies Pure Wheat Middlings -----	2822	3.3	13.0	9.0		Wheat product
McKensies Pure Wheat Bran -----	2823	3.3	14.0	10.0		Wheat product
McMurtry & Walther, Marshall, Ind. McMurtry & Walther Wheat Bran and Shorts -----	1671	3.7	14.0	10.0		Wheat product
McMurtry & Walther Wheat Bran -----	1672	3.7	14.0	10.0		Wheat product
Walther Wheat Shorts -----	2407	3.7	14.0	10.0		Wheat product
McNaughton, Theo. & R. C., Ray, Ind. Corn and Oats Chop -----	1700	3.9	9.5	6.0		Corn and oats
McNely, Thos. N., Walkerton, Ind. Mixed Feed -----	1445	4.0	15.0	25.0		Buckwheat product
Wheat Middlings -----	1446	4.0	14.0	7.0		Wheat product
Corn and Oats Chop -----	1447	3.9	9.5	9.0		Corn and oats
Wheat Bran -----	1448	3.8	14.0	10.0		Wheat product
Naber & Co., Chas. F., North Manchester, Ind. Naber's Chop -----	484	3.9	9.5	6.0		Corn and oats
Nading, Simon, Hope, Ind. Simon Nading's Mixed Feed -----	1983	3.7	14.1	10.0		Wheat and corn product
Simon Nading's Wheat Middlings -----	1984	3.3	14.2	6.3		Wheat product

¹⁴Succeeded by Wm. Esley & Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Nappanee Produce Co., Nappanee, Ind. Nappanee Produce Co.'s Chop Feed.....	1058	3.9	9.5	6.0	Corn and oats	
Nashville Roller Mills, Nashville, Ind. Corn Bran	2508	5.0	9.0	13.0	Corn product	
Mixed Feed	2509	3.8	14.0	13.0	Wheat bran, shorts and screenings	
Nathan & Levy, Fort Wayne, Ind. Chop Feed	1758	3.9	9.5	6.0	Corn and oats	
Neill & VanValer, Jonesboro, Ind. Wheat Bran	763	3.8	14.0	10.0	Wheat product	
Wheat Middlings	764	4.0	14.0	7.0	Wheat product	
Wheat Shorts	765	4.9	14.0	8.0	Wheat product	
Wheat Screenings	766	3.0	12.0	6.0	Wheat screenings	
Chop Feed	767	3.9	9.5	6.0	Corn and oats	
Bran and Shorts	1673	3.8	14.0	10.0	Wheat product	
Mixed Feed	2409	3.0	13.0	10.0	Wheat bran, shorts, screenings and corn bran	
Neasbit & Co., I. A., Sullivan, Ind. Shipstuff	880	5.0	15.4	5.0	Wheat product	
Wheat Bran	881	4.0	15.4	9.0	Wheat product	
Mixed Feed	986	3.9	16.4	9.7	Wheat bran, shipstuff and corn bran	
New & Cook, Zionsville, Ind. Wheat Bran and Screenings.....	1701	3.5	13.0	11.0	Wheat product and screenings	
Wheat Shorts	2845	4.0	14.0	7.0	Wheat product	
Corn and Oats Chop.....	2846	3.5	9.0	8.0	Corn and oats	
Mixed Feed	2862	3.5	13.0	12.0	Wheat bran, shipstuff, screenings and corn bran	
New Albany Milling Co., New Albany, Ind. Mixed Feed	2807	4.0	14.5	8.0	Wheat bran and shorts	
Newberry Milling Co., Newberry, Ind. Neff Mill Feed.....	1898	3.0	9.0	8.0	Wheat bran, screenings and corn bran	
Mixed Feed	1899	3.5	12.0	8.1	Wheat product	
New Carlisle Milling Co., New Carlisle, Ind. Corn and Oats Chop.....	1315	3.9	9.0	9.0	Corn and oats	
Wheat Bran	1316	3.8	14.0	10.0	Wheat product	
Wheat Middlings	1317	4.0	14.0	7.0	Wheat product	
New Castle Elevator Co., New Castle, Ind. Corn and Oat Chop.....	702	3.9	9.0	6.0	Corn and oats	
New Marion Flour Mills, New Marion, Ind. Wheat Shorts	2536	3.0	12.0	7.0	Wheat product	
Wheat Bran	2381	3.8	14.0	10.0	Wheat product	
New Milling Co., The, Greenfield, Ind. Corn and Oats Chop.....	1861	3.9	9.5	6.0	Corn and oats	
Middlings	1863	4.0	14.0	7.0	Wheat product	
Mixed Feed	2016	3.8	14.0	12.0	Wheat bran, corn bran and screenings	
New Ross Grain Co., New Ross, Ind. Chop Feed	1498	3.9	9.5	6.0	Corn and oats	
Niccum Milling Co., Swayzee, Ind. Wheat Middlings	2451	3.0	13.0	7.0	Wheat product	
Niccum & Russell, Kimmel, Ind. Corn and Oats Chop.....	1781	3.9	9.5	6.0	Corn and oats	
Wheat Bran	1782	3.8	14.0	10.0	Wheat product	
Wheat Middlings	1783	4.0	14.0	10.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

I.A.B.E.L	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Nichols & Co., C. E., Lowell, Ind. Corn and Oats Chop.....	1528	3.5	9.0	9.0	Corn and oats
Nicholson & Son, E. J., Ross, Ind. Corn and Oats Chop.....	1554	3.5	9.0	9.0	Corn and oats
Nieman, C., Sunman, Ind. Nieman's Middlings	500	4.0	14.0	5.0	Wheat product
Nieman's Mixed Feed.....	501	3.7	14.0	9.7	Wheat product and screenings
Niezer & Co., Monroeville, Ind. Corn and Oats Chop.....	1501	3.5	9.0	9.0	Corn and oats
Wheat Bran	1502	3.8	14.0	10.0	Wheat product
Wheat Middlings	1503	4.0	14.0	7.0	Wheat product
Nipp, John, Rushville, R. R. No. 10, Ind. Bran and Middlings.....	2686	3.5	13.0	8.0	Wheat product
Noblesville Milling Company, Noblesville, Ind. N. M. Co.'s Mixed Feed, Pure Wheat Bran and Middlings	159	3.7	15.0	7.0	Wheat product
Nodine, W. J., Waterloo, Ind. Mixed Feed	2771	3.0	13.0	10.0	Wheat bran and middlings
Chop Feed	2772	2.4	8.3	12.0	Corn, oats, rye, barley and screenings
Wheat Bran	2773	3.0	13.0	10.0	Wheat product
Noftager, Benjamin, Rochester, Ind. Corn and Oats Chop.....	2061	3.5	9.0	6.0	Corn and oats
Noragon & Sons, Butler, Ind. Noragon's Chop Feed.....	1137	3.9	9.5	6.0	Corn and oats
North Manchester Milling Co., North Manchester, Ind. "North Manchester Milling Company's Middlings"	855	4.0	14.0	7.0	Wheat product
"North Manchester Milling Company's Chop"	856	3.9	9.5	6.0	Corn and oats
"North Manchester Milling Company's Bran"	857	3.8	14.0	10.0	Wheat product
North Star Feed & Cereal Co., Minneapolis, Minn. No. 1 Corn and Oats Feed.....	2506	3.1	9.8	5.9	Corn and oats
North Western Consolidated Milling Co., The, Minneapolis, Minn. Pure Wheat Bran	2825	4.0	14.5	11.0	Wheat product
Pure Wheat Middlings	2826	4.5	15.0	10.0	Wheat product
Pure Wheat Flour Middlings.....	2827	4.5	15.5	6.0	Wheat middlings and red dog flour
XXX Comet	2828	4.0	16.5	3.0	Red dog flour
Nugent, Thomas, Jamestown, Ind. Wheat Middlings	208	3.9	14.3	5.8	Wheat product
Nugents Bran and Shorts and Screenings	1746	3.7	13.0	10.0	Wheat bran, shorts, screenings and corn bran
Nugents Bran and Screenings.....	1747	3.7	13.0	12.0	Wheat bran, screenings and corn bran
Oakland City Roller Mills, Oakland City, Ind. Mixed Feed	1759	3.0	13.0	8.0	Wheat product
Dairy Mixed Feed.....	1941	3.0	13.0	8.0	Wheat bran, middlings, screenings and corn bran

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Oaktown Flouring Mill Co., Oaktown, Ind.						
Shorts	1141	4.0	14.0	8.0		Wheat product
Mill Run	1149	3.5	13.0	11.0		Wheat bran, screenings and corn bran
Odon Milling Co., The, Odon, Ind.						
Chop Feed	55	3.9	9.5	6.0		Corn and oats
Mixed Feed	1397	3.5	10.0	12.0		Wheat bran, shorts, screenings and corn bran
Ogden, George R., Milford, Ind.						
Corn and Oats Chop	1575	3.8	9.0	8.0		Corn, oats and corn bran
Wheat Bran	1576	3.8	14.0	10.0		Wheat product
Wheat Middlings	1577	4.0	14.0	7.0		Wheat product
Ohio Hay & Grain Co., Shakespeare, Ind.						
Chop Feed	1574	3.5	9.0	10.0		Wheat and rye screenings
Oldenburg Flour Mills, Oldenburg, Ind.						
Mixed Feed	489	3.9	12.8	10.0		Wheat bran and screenings
Wheat Shorts	2653	3.0	13.1	8.0		Wheat product
Orangeville Flouring Mill, The, Orleans, R. R. No. 2, Ind.						
Mixed Feed	2265	4.0	14.0	10.0		Wheat product
Organ Springs Mills, Salem, Ind., R. R. No. 6.						
Mixed Feed	3306	3.8	14.0	11.0		Wheat bran, shorts and screenings
Otwell Mill Co., Otwell, Ind.						
Wheat Bran and Screenings	1107	3.5	13.5	10.0		Wheat bran and screenings
Shipstuff	1202	4.0	14.0	8.0		Wheat product
Owens & Son, J. W., Saratoga, Ind.						
Corn and Oats Chop	1864	3.9	9.5	6.0		Corn and oats
Owensville Milling Co., Owensville, Ind.						
"Daisy Feed"	3023	4.0	14.0	8.0		Wheat bran, middlings and screenings
Oxford Feed Mill, Oxford, Ind.						
Deed's Chop Feed	249	3.9	9.5	6.0		Corn, oats and corn bran
Pancost Milling Company, Elkhart, Ind.						
"Chop-Feed"	798	3.0	8.0	13.0		Corn, oats and corn bran
"Bran"	799	3.0	14.0	10.0		Wheat product
Middlings	800	4.0	14.0	7.0		Wheat product
Mixed Chop Feed	1065	3.0	8.0	20.0		Corn, oats, rye, wheat and buckwheat
Buckwheat Bran	2897	1.0	3.0	45.0		Buckwheat product
Paoli Milling Co., The, Paoli, Ind.						
Mixed Feed	625	4.0	8.0	13.0		Wheat bran and corn bran
Wheat Bran	629	3.0	12.0	10.0		Wheat product
Shorts	627	3.0	12.0	8.0		Wheat product
Paoli Mixed Feed	2820	3.0	10.0	12.0		Wheat bran, shorts, screenings and corn bran
Paragon Roller Mills, Paragon, Ind.						
Mixed Feed	1523	3.8	12.0	10.0		Wheat and corn product
Paragon Roller Mills, Albion, Ind.						
Shipley's Wheat Bran	2303	3.8	14.0	10.0		Wheat product
Shipley's Wheat Middlings	2304	4.0	14.0	7.0		Wheat product
Parker City Mills, Parker, Ind.						
Corn and Oats Chop	1710	3.9	9.5	6.0		Corn and oats
Wheat Middlings	1711	4.0	14.0	7.0		Wheat product
Wheat Bran	1712	3.8	14.0	10.0		Wheat product
Mill Feed	2289	3.9	13.0	9.0		Wheat product
Star Mixed Feed	2270	2.5	9.0	7.0		Corn, oats, rye and screenings

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Paxson, Charles E., Elkhart, Ind.					
Paxson's Middlings.....	807	4.0	14.0	5.2	Wheat product
Paxson's Corn and Oats Chop.....	808	3.9	9.5	6.0	Corn and oats
Paxson's Wheat Bran.....	809	3.8	14.0	9.0	Wheat product
Pearson, Warren W., Upland, Ind.					
Eureka Feed.....	1764	3.9	9.5	6.0	Corn and oats
Pendleton Feed & Fuel Co., Pendleton, Ind.					
Chop Feed.....	1477	3.0	10.0	6.0	Corn, oats and wheat screenings
Pendleton Milling Co., The, Pendleton, Ind.					
Wheat Bran.....	1480	3.8	14.0	10.0	Wheat product
Wheat Middlings.....	1481	4.0	14.0	7.0	Wheat product
Pennsylvania Elevator & Supply Co., Indianapolis, Ind.					
Corn and Oat Chop.....	1643	3.9	9.5	6.0	Corn and oats
Corn Bran.....	1649	5.0	8.0	13.0	Corn product
Pennville Milling Co., Pennville, Ind.					
Wheat Bran.....	1695	3.8	14.0	10.0	Wheat product
Corn and Oats Chop.....	1696	3.9	9.5	6.0	Corn and oats
Wheat Middlings.....	1697	4.0	14.0	7.0	Wheat product
People's Flouring Mills, The, Ashley, Ind. ¹⁸					
York's Wheat Middlings.....	2584	4.0	14.0	7.0	Wheat product
York's Wheat Bran.....	2585	3.8	14.0	10.0	Wheat product
Perkins, Charles A., Goodland, Ind.					
Wheat Bran.....	1168	3.7	14.0	9.0	Wheat product
Wheat Middlings.....	1169	5.6	17.4	5.2	Wheat product
Perkins Corn and Oats Chop.....	1170	3.9	9.5	6.0	Corn and oats
Perky Mills, The, Hamilton, Ind.					
Perky Mill's Bran.....	1714	3.8	14.0	10.0	Wheat product
Perkys Mill's Wheat Middlings.....	1715	4.0	14.0	7.0	Wheat product
Perry Feed Mill, H. D., Hartford City, Ind.					
Perry's Chop Feed.....	2789	3.5	9.0	12.0	Corn, oats, rye and corn bran
Perrysville Flour Mills, Perrysville, Ind.					
"Victor".....	2674	2.4	9.0	13.0	Wheat bran and corn bran
Persing, Abraham, Wolf Lake, Ind.					
Wheat Middlings.....	1631	4.0	14.0	7.0	Wheat product
Wheat Bran.....	1632	3.8	14.0	10.0	Wheat product
Corn and Oats Chop.....	1630	3.9	9.5	6.0	Corn and oats
Peru Milling Company, The, Peru, Ind.					
Wheat Bran and Screenings.....	17	3.1	14.5	10.0	Wheat product and screenings
Wheat Middlings.....	18	3.1	14.2	7.0	Wheat product
Chop Feed.....	19	3.2	8.8	4.0	Corn and oats
Petersburg Milling & Grain Co., Petersburg, Ind.					
Mixed Feed.....	1127	3.5	13.0	11.5	Wheat and corn product and screenings
Peterson, C. A., Chesterton, Ind.					
Wheat Bran.....	2045	3.8	14.0	10.0	Wheat product
Wheat Middlings.....	2158	4.0	14.0	7.0	Wheat product
Phillips Bros. & Bechdol, Walton, Ind.					
Corn and Oats Chop.....	1987	3.9	9.5	7.0	Corn and oats

¹⁸Succeeded by Ashley-Hudson Mig. & Grain Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Phillips & Ross Grain Co., Rosedale, Ind. Mill Feed -----	1883	3.9	9.5	25.0	Wheat, corn, oats and wheat screenings
Phoenix Flour Mill, Evansville, Ind. Phoenix Wheat Middlings -----	122	4.4	16.2	5.0	Wheat product
Bran and Screenings -----	2252	4.0	15.0	10.0	Wheat product and screenings
Phoenix "A" Mixed Feed -----	2253	4.0	15.0	9.0	Wheat product and screenings
Pierce Elevator Co., Union City, Ind. Pierce's Corn and Oats Chop -----	390	3.8	9.4	7.0	Corn and oats
Wheat Middlings -----	2623	4.0	14.0	9.0	Wheat product
Mixed Feed -----	2624	3.8	13.0	13.0	Wheat bran and screenings
Pillsbury Flour Mills Company, Minneapolis, Minn. Pillsbury's Bran -----	2684	4.0	14.5	9.5	Wheat product
Pillsbury's B. Middlings -----	2717	4.5	15.0	8.0	Wheat product
Pitman, E. L., Corydon, Ind. Pitman's Pure Wheat Bran -----	677	4.0	15.4	9.0	Wheat product
Pitman's Pure Wheat Middlings -----	2049	4.0	15.4	5.0	Wheat product
Pitman, H. E., Bedford, Ind. Chop Feed -----	387	3.2	8.8	4.0	Corn and oats
Pitman's Mixed Feed -----	671	3.9	14.0	9.0	Wheat bran and shorts
Piqua Milling Co., The, Piqua, Ohio. Wheat Middlings -----	2295	4.0	16.0	7.0	Wheat product
Wheat Bran -----	2296	3.0	14.0	10.0	Wheat product
Plainfield Milling Co., Plainfield, Ind. Bran and Screenings -----	2339	3.5	14.0	10.0	Wheat bran, screenings and corn bran
Shorts -----	2340	3.5	13.0	7.0	Wheat product
Plant Milling Co., Geo. P., St. Louis, Mo. Middlings -----	914	4.4	17.1	5.1	Wheat product
Bran -----	915	3.2	15.4	9.7	Wheat product
(P) Mixed Feed -----	2916	4.0	16.0	9.0	Wheat bran and middlings
Platz, D. A., Shipshewana, Ind. Corn and Oats Chop -----	1614	3.9	9.5	6.0	Corn and oats
Wheat Middlings -----	1615	4.0	14.0	7.0	Wheat product
Wheat Bran -----	1616	3.8	14.0	10.0	Wheat product
Plymouth Grain Co., The, Plymouth, Ind. Mixed Feed -----	1438	4.0	9.5	6.0	Corn, oats and rye
Pond Creek Mill & Elevator Co., Pond Creek, Okla. Bran -----	1981	3.0	14.0	11.0	Wheat product
Shorts -----	1982	4.0	16.0	8.0	Wheat product
Poneto Grain Co., Poneto, Ind. Corn and Oats Chop -----	1699	3.9	9.5	6.0	Corn and oats
Portage Feed Company, South Bend, R. F. D. No. 4, Ind. Corn and Oats Chop -----	1133	3.8	9.6	6.0	Corn and oats
Porter Milling Co., Denver, Ind. Millfeed -----	1126	3.8	14.0	10.4	Wheat product
Poseyville Milling Co., Poseyville, Ind. Bran -----	1986	3.7	14.0	11.0	Wheat and corn product
Shipstuff -----	1987	4.0	14.0	8.0	Wheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Prange, F., Indianapolis, Ind. Mixed Feed	805	3.7	13.5	12.0	Wheat bran, shorts, screenings and corn bran	
Pressel, S. J., Hagerstown, Ind. Pressel's Chop Feed	139	3.2	9.0	6.0	Corn and oats	
Pressel's Wheat Middlings	140	3.7	14.0	7.0	Wheat product	
Pressel's Wheat Bran	141	3.2	12.0	10.0	Wheat product	
Price & Bruce, Crawfordsville, Ind. ¹⁶ Corn and Oat Chop	623	3.9	9.5	6.0	Corn and oats	
Princeton Milling Co., Princeton, Ind. Ship and Bran (run together)	356	4.0	14.0	9.0	Wheat product	
Star Brand Mixed Feed	1978	3.5	13.0	7.0	Wheat product and screenings	
Props Milling Co., LaGro, Ind. Chop Feed	392	3.0	8.8	9.0	Corn and oats	
Mixed Feed	393	3.1	12.4	10.0	Wheat bran, middlings and screenings	
Props Mixed Feed	1989	3.0	10.0	9.0	Wheat bran, screenings and corn bran	
Pyrmont Milling Co., The, Pyrmont, Ind. Pyrmont Ship	265	4.0	14.0	7.0	Wheat product	
Pyrmont Corn and Oats Chop	266	3.9	9.5	6.0	Corn and oats	
Pyrmont Mills Bran	2946	3.0	14.0	10.0	Wheat product	
Quebbeman & Temple, Ramsey, Ind. Shorts	1290	4.0	14.0	8.0	Wheat product	
Bran	1291	4.0	14.0	10.0	Wheat product	
Quickel, R. G., Hagerstown, Ind. Quickel's Wheat Bran	616	3.2	12.0	10.0	Wheat product	
Quickel's Wheat Middlings	2639	2.0	10.0	5.0	Wheat product	
Quillin Bros., Crawfordsville, Ind. Corn and Oats Chopped	684	3.9	9.5	6.0	Corn and oats	
Raasch, Paul E., Crown Point, Ind. Wheat Bran	1358	3.5	14.0	10.0	Wheat product	
Corn and Oats Chop	1359	3.0	9.0	9.0	Corn and oats	
Red Dog Flour	2640	2.0	12.0	7.0	Wheat product	
Raper & Co., T. A., Spencer, Ind. Raper's Mixed Feed	2375	3.5	14.0	6.0	Wheat bran, shorts, oats and corn	
Raschka, Wm., Ainsworth, Ind. Wheat Bran	1441	3.5	14.0	10.0	Wheat product	
Wheat Middlings	1442	3.8	14.0	10.0	Wheat product	
Ray & Rice, Camden, Ind. Ray & Rice's Wheat Bran	611	3.7	14.0	10.0	Wheat product	
Chop Feed	2372	3.9	9.3	8.0	Corn, oats and corn bran	
Wheat Shorts	3002	3.0	14.0	8.0	Wheat product	
Red Mill, The, R. F. D., Fairland, Ind. Mixed Feed	2601	3.8	14.0	11.0	Wheat bran and screenings	
Wheat Middlings	2602	3.0	13.0	8.0	Wheat product	
Redden & Sons, New Paris, Ind. Reddens Corn and Oat Chop	972	3.9	9.5	6.0	Corn and oats	
Wheat Bran	2118	2.0	11.0	10.0	Wheat product	
Wheat Middlings	2625	2.0	10.0	7.0	Wheat product	
Reddington & Morgan, Rolling Prairie, Ind. Wheat Bran	1278	3.8	14.0	10.0	Wheat product	
Corn and Oats Chop	1279	3.9	9.0	9.0	Corn and oats	
Wheat Middlings	2066	3.5	14.0	7.0	Wheat product	

¹⁶Succeeded by A. B. Cohes & Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Reed & Co., H. G., Clymers, Ind. Corn and Oats Chop.....	2323	3.9	9.5	6.0		Corn and oats
Reed & Co., T. L., Star City, Ind. T. L. Reed & Co. Feed.....	1964	3.7	10.0	5.5		Corn, oats, wheat and rye
Reed & Son, Isaac, Argos, Ind. Wheat Bran.....	2184	3.9	14.0	10.0		Wheat product
Wheat Middlings.....	2185	4.0	14.0	7.0		Wheat product
Corn and Oats Chop.....	2383	3.5	9.0	8.0		Corn and oats
Rego Grist Mill, Rego, Ind., R. P. Paoli. Mixed Feed.....	2284	3.8	14.0	11.0		Wheat product and screenings
Remington Grain Co., Remington, Ind. Corn and Oats Chop.....	1311	3.9	9.0	9.0		Corn and oats
Richardson, Geo. L., Logansport, Ind. Wheat Middlings.....	2145	3.7	15.0	6.0		Wheat product
Wheat Bran.....	2148	3.8	14.0	10.0		Wheat product
Richardson's Chop Feed.....	2147	3.7	9.0	7.0		Corn and oats
Richey Elevator, W. S., Hobbs, Ind. Chop Feed.....	2344	3.0	9.0	7.0		Corn, oats, rye, barley and corn bran
Wheat Shorts.....	2373	3.0	12.0	10.0		Wheat product
Richland Milling Co., Bloomfield, Ind. Shipstuff.....	1147	4.0	14.0	8.0		Wheat product
Mixed Feed.....	1148	3.0	12.5	11.0		Mill run, corn bran and screenings
Wheat Bran.....	1149	3.5	14.0	10.0		Wheat product
Richmond Corn Mills, Richmond, Ind. Corn Bran.....	1727	5.0	8.0	13.0		Corn product
Richmond Roller Mills, Richmond, Ind. The Richmond Roller Mills Wheat Bran..	482	3.2	12.0	10.0		Wheat product
The Richmond Roller Mills Wheat Middlings.....	483	3.7	14.0	4.3		Wheat product
Ridgeville Roller Mills & Elevator, Ridgeville, Ind. Corn and Oats Chop.....	1881	3.9	9.5	6.0		Corn and oats
Bran.....	1832	3.8	13.0	11.0		Wheat and corn product
Wheat Middlings.....	1833	4.0	14.0	7.0		Wheat product
Riedel & Gray, Ossian, Ind. Wheat Bran.....	2005	3.6	14.0	10.3		Wheat product
Wheat Middlings.....	2006	3.6	14.0	10.3		Wheat product
Ripple Milling Co., Mishawaka, Ind. Hudson's Wheat Bran.....	965	3.8	14.0	10.0		Wheat product
Corn and Oats Chop.....	1363	3.5	9.0	9.0		Corn and oats
Wheat Middlings.....	1364	4.0	14.0	7.0		Wheat product
Rittenhouse, E. S., Liberty Mills, Ind. "Liberty Bird" Bran.....	373	3.7	14.0	10.0		Wheat product
Liberty Bird Middlings.....	374	4.0	14.0	7.0		Wheat product
Liberty Bird Chop.....	377	3.0	8.0	8.0		Corn and oats
River Queen Mills, Rensselaer, Ind. Corn and Oats Chop.....	1065	3.9	9.5	6.0		Corn and oats
Wheat Bran.....	1066	3.8	14.0	10.0		Wheat product
Wheat Middlings.....	1067	4.0	14.0	7.0		Wheat product
Buckwheat Bran and Middlings.....	1321	3.0	12.0	23.0		Buckwheat product
Rye Bran.....	1322	2.5	14.0	5.0		Rye product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Elver Side Mill, Wolcottville, Ind.						
Elver Side Mills, Bran	1620	3.8	14.0	10.0		Wheat product
Elver Side Mills, Wheat Middlings	1621	4.0	14.0	7.0		Wheat product
Roach & Rothenberger, Delphi, Ind.						
Corn and Oats Chop	294	3.9	9.5	6.0		Corn and oats
Shorts and Middlings	295	4.0	14.0	8.0		Wheat product
Mixed Feed	2971	3.8	11.0	12.0		Wheat bran, shorts, screenings and corn bran
Roblson, Harriett K., Brewersville, Ind.						
Wheat Middlings	916	4.0	14.0	7.0		Wheat product
Wheat Bran	917	3.8	14.0	10.0		Wheat product
Rochester Roller Mills, Rochester, Ind.						
Corn and Oats Chop	1891	3.9	9.5	8.0		Corn, oats and corn bran
Middlings	2169	4.0	14.0	8.0		Wheat product
Bran	2170	3.8	14.0	10.0		Wheat product
Rockport Milling Co., The, Rockport, Ind.						
A. Mixed Feed	2247	3.9	13.3	11.0		Wheat product, screenings and corn bran
Bran and Screenings	2248	3.8	13.3	11.0		Wheat bran, screenings and corn bran
Kopp's Wheat Middlings	2748	3.5	14.0	7.0		Wheat product
Rodger Bros., Hanover, Ind.						
Ship Stuff	2559	2.5	11.5	6.0		Wheat product
Roeske Bros., Michigan City, Ind.						
Wheat Bran	1467	3.8	14.0	10.0		Wheat product
Corn and Oats Chop	1468	3.9	9.5	6.0		Corn and oats
Wheat and Rye Middlings	1469	3.5	14.0	7.0		Wheat and rye product
Rohm Bros., Rockville, Ind.						
Mill Feed	292	4.0	14.0	10.0		Wheat product, screenings and corn bran
Shorts	293	4.0	14.0	8.0		Wheat product
Rohm Bros. & Co., Mansfield, Ind.						
Mill Feed	294	4.0	14.0	10.0		Wheat product, screenings and corn bran
Shorts	295	4.0	14.0	8.0		Wheat product
Rokowski, Alex., South Bend, Ind.						
Wheat Bran	1960	3.8	14.0	11.0		Wheat product
Wheat Middlings	1961	4.0	14.0	7.0		Wheat product
Mixed Feed	2844	3.8	14.0	12.0		Wheat bran and screenings
Rose Milling Co., Alfordsville, Ind.						
Wheat Middlings	909	4.0	14.0	7.0		Wheat product
Bran	910	3.8	14.0	10.0		Wheat product
Rosedale Mills, Rosedale, Ind.						
Rosedale Mill Feed	741	3.9	14.0	9.0		Wheat bran and shorts
Rosedale Mixed Feed	1768	4.0	12.0	8.0		Wheat bran, middlings, screenings, corn and corn bran
Bothrock Elevator, Centerton, Ind.						
Chop Feed	2635	3.5	9.0	10.0		Corn, oats and corn bran
Ground Screenings	2636	2.0	10.0	13.0		Wheat screenings
Rouse & Son, Wm., Indianapolis, Ind.						
Corn Bran	2124	5.0	9.0	13.0		Corn product
C. & O.	2776	4.0	10.0	6.0		Corn and oats
Runge & Co., John, Richmond, Ind.						
Corn and Oats Chop	1450	3.7	9.5	6.0		Corn and oats
Ruoff, Geo. D., Osgood, Ind.						
Rye Shorts	2899	2.5	14.0	7.0		Rye product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Russell Milling Company, The, Russell, Kansas.						
Wheat Shorts	1801	4.5	17.0	7.4	Wheat product	
Wheat Middlings	1809	5.6	18.0	5.3	Wheat product	
Wheat Bran	1808	4.0	15.0	10.0	Wheat product	
Rynerson, John, Vigo, Ind., B. R. No. 1, Pralieton.						
Rynerson's Corn and Oat Chop.....	1177	4.0	8.0	5.0	Corn and oats	
Sahm, Adam, Lawrenceville, Ind.						
Sahms Middlings	560	4.0	15.6	5.4	Wheat product	
Sahms Wheat Bran	561	3.7	14.0	10.7	Wheat product	
Salem Farmers Milling Co., Salem, Ind.						
Wheat Middlings	2306	4.0	14.0	7.0	Wheat product	
Mixed Feed	2307	3.8	14.0	11.0	Wheat product and screenings	
Salem Milling Co., Salem, Ind.						
Wheat Bran	1207	3.8	14.0	10.0	Wheat product	
Wheat Shorts	2456	3.0	13.0	8.0	Wheat product	
Mixed Feed	2571	3.5	14.0	10.0	Wheat and corn bran	
Sanderson, R. N., Orland, Ind.						
Wheat Middlings	1735	4.0	14.0	7.0	Wheat product	
Wheat Bran	1736	3.8	14.0	10.0	Wheat product	
Corn and Oats Chop.....	1737	3.9	9.5	6.0	Corn and oats	
Schaefer & Schwartzkopf, Columbus, Ind.						
No. 6 Corn Bran.....	476	5.0	8.0	13.0	Corn product	
Anchor Wheat Bran	477	3.8	14.0	10.0	Wheat product	
Acorn Wheat Middlings	2102	2.0	11.0	7.0	Wheat product	
Schafer, Lewis G., Clay City, Ind.						
Corn and Oats Chop.....	1797	3.9	9.5	6.0	Corn and oats	
Schalk Bros., Anderson, Ind.						
Schalk's Wheat Middlings	223	4.0	14.0	7.6	Wheat product	
Schalk's Wheat Bran	223	3.8	14.0	10.0	Wheat product	
Corn Bran	1757	5.0	8.0	13.0	Corn product	
Schilt, W. F., Bremen, Ind.						
Chop	824	3.9	9.5	6.0	Corn, oats and rye	
Bran	826	3.7	14.0	10.0	Wheat and corn product	
Shorts	826	4.0	14.0	8.0	Wheat product and screenings	
Schlientz & Sons, Fred, Centerville, Ind.						
Corn and Oats Chop.....	1451	3.7	9.0	6.0	Corn and oats	
Schnaible Grain Company, Matt., The, La-Fayette, Ind.						
Mixed Ground Corn and Oats.....	3	3.0	9.0	7.0	Corn and oats	
Schnell, J. H., Birdseye, Ind.						
Mill Feed	963	3.7	14.0	10.0	Wheat product	
Schnellville Milling Co., Schnellville, Ind.						
Schnellville Milling Co.'s Wheat Bran..	964	3.8	14.0	10.0	Wheat product	
Schnellville Milling Co.'s Wheat Shorts..	965	4.0	14.0	8.0	Wheat product	
Scholl & Tieteman, Welsburg, Ind.						
Wheat Middlings	470	4.0	14.0	7.0	Wheat product	
Winter Wheat Bran	471	3.6	13.5	10.0	Wheat product	
"Big Four" Mixed Feed.....	1892	3.6	13.5	10.0	Wheat product and screenings	
Schoiz & Co., Paul J., Whiting, Ind.						
Wheat Middlings	1399	4.0	14.0	7.0	Wheat product	
Corn and Oats Chop.....	1401	3.5	9.0	9.0	Corn and oats	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Schroeder, B. F., Crown Point, Ind. Corn and Oats Chop----- Ground Feed -----	1366 2113	3.5 3.3	9.0 12.0	9.0 6.0		Corn and oats Corn, oats and rye
Schroeder Bros., Hammond, Ind. Corn and Oats Chop-----	1986	3.9	9.5	7.0		Corn and oats
Schrock, M. C., Goshen, Ind. Corn and Oats Chop-----	2759	3.5	9.0	7.0		Corn and oats
Schulenburg & Donseiman, R. F. D. No. 2, Dillsboro, Ind. Wheat Bran ----- Wheat Shorts -----	957 2678	3.8 3.3	14.0 13.3	10.0 8.0		Wheat product Wheat product
Schultz & Sons, Elberfeld, Ind. Middlings ----- Wheat Bran and Screenings-----	1108 1109	4.0 3.5	14.0 13.5	8.0 10.0		Wheat product Wheat bran and screenings
Schuppert, M., Depauw, Ind. Depauw Feed -----	1020	4.0	15.0	8.0		Wheat product
Scientific Milling Company, Marion, Ind. Corn and Oats Chop Feed----- Mixed Bran -----	1245 1537	3.0 4.0	8.3 9.0	6.0 13.0		Corn and oats Wheat and corn product
Scottsburg Milling Co., Scottsburg, Ind. Scottsburg Milling Co.'s Mixed Feed-----	794	4.0	14.0	11.0		Wheat and corn product
Seagly, A. J., Stroh, Ind. Corn and Oats Chop-----	1608	3.9	9.5	6.0		Corn and oats
Sellers, James S., Crawfordsville, Ind. Corn and Oats Chop-----	2570	3.9	9.5	9.0		Corn and oats
Semon, F. T., Vernon, Ind. Semon's Mixed Feed----- Mixed Feed -----	583 1613	4.0 4.0	15.0 11.0	9.0 12.0		Wheat product Wheat and corn product
Seward & Bakestraw, Oakford, Ind. Perfection Bran & Middlings----- Perfection Corn and Oats Chop-----	838 1902	3.9 3.5	14.0 9.0	9.2 6.0		Wheat product Corn and oats
Shellabarger Mill & Elevator Co., Branch American Hominy Co., Decatur, Ill. Choice Winter Wheat Bran----- Choice Winter Wheat Middlings-----	2491 2492	3.0 3.6	16.0 15.8	10.0 6.0		Wheat product Wheat product
Sheridan Milling Co., Sheridan, Ind. Corn and Oats Chop----- Bran ----- Shorts -----	306 307 3006	3.0 3.8 2.9	9.0 14.0 14.0	10.0 10.0 8.0		Corn and oats Wheat product Wheat product
Shetterly Bros., Lapel, Ind. Bran and Middlings-----	2644	3.0	14.0	10.0		Wheat product
Shine & Co., John H., New Albany, Ind. Star Feed ----- Feed Meal ----- Wheat Bran -----	308 2060 2066	4.0 6.0 3.8	14.0 9.0 14.0	8.0 10.0 10.0		Wheat product Corn product Wheat product
Shotwell, Chas. A., Indianapolis, Ind. Rye Middlings -----	2030	2.5	14.0	6.0		Rye product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Silver Star Milling Co., Patricksburg, Ind.						
Mixed Feed	1175	3.8	13.0	10.0	Wheat product, screenings and corn bran	
Bran	2120	3.0	13.0	10.0	Wheat product	
Shorts	2121	3.5	13.0	9.0	Wheat product	
Chop Feed	2020	3.2	9.0	7.0	Corn, oats and wheat screenings	
Sims Grain Co., J. T., Frankfort, Ind.						
Wheat Shorts	1178	4.0	14.0	3.0	Wheat product	
Wheat Bran	1179	3.7	14.0	10.0	Wheat product	
Corn and Oats Chop	1180	3.9	9.5	6.0	Corn and oats	
Slack, E. B., Muncie, Ind.						
Slack's Chop Feed	811	3.5	9.5	10.0	Corn, oats and rye	
Sleepy Eye Milling Co., Sleepy Eye, Minn.						
Sleepy Eye Wheat Middlings	518	4.0	17.0	8.0	Wheat product	
Sleepy Eye Bran	519	4.0	15.0	9.5	Wheat product	
Sleepy Eye Red Dog or Low Grade Flour	2221	2.5	15.0	8.0	Wheat product	
Sloan, J. F., Palestine, Burket P. O., Ind.						
Sloan's Wheat Middlings	227	4.0	14.0	7.0	Wheat product	
Sloan's Wheat Bran	228	3.8	14.0	10.0	Wheat product	
Smeltsy, I. Anson, Ontario, Ind.						
Wheat Middlings	1008	4.0	14.0	7.0	Wheat product	
Wheat Bran	2668	2.0	8.0	10.0	Wheat product	
Smith, A. S., Flint, Ind.						
Wheat Bran	1600	3.8	14.0	10.0	Wheat product	
Wheat Middlings	1601	4.0	14.0	7.0	Wheat product	
Smith, D. R., Tipton, Ind.						
Mixed Feed, Bran, Shorts and Middlings	1542	3.7	17.2	6.5	Wheat product	
Corn Bran	1543	5.0	8.0	13.0	Corn product	
Chop Feed	1544	3.7	11.0	5.2	Corn and oats	
Smith, Elmer B., Knightstown, Ind.						
Smith's Wheat Bran	200	3.2	13.0	10.0	Wheat product	
Smith's Corn and Oats Feed	201	3.2	9.0	6.0	Corn and oats	
Smith's Wheat Middlings	202	3.7	14.0	7.0	Wheat product	
Smith's Mixed Feed	203	3.5	13.0	8.0	Wheat and corn product	
Mixed Bran	2007	3.5	13.5	12.0	Wheat and corn bran	
Smith, James W., Peru, Ind.						
Chop Feed	260	3.1	8.9	7.0	Corn and oats	
Wheat Bran	270	3.5	14.0	10.0	Wheat product	
Wheat Middlings	271	3.1	14.2	7.0	Wheat product	
Smith, L. W., Kokomo, Ind.						
Mixed Feed	71	3.8	13.0	9.0	Wheat product, screenings and corn bran	
Smith's Chop	1548	4.0	9.0	9.0	Corn, oats and corn bran	
Smith's Wheat Middlings	2423	1.9	13.0	7.0	Wheat product	
Smith, Wm., Versailles, Ind.¹⁷						
Smiths Wheat Middlings	880	4.0	14.0	7.0	Wheat product	
Smiths Wheat Bran	881	3.8	14.0	10.0	Wheat product	
Smith Co., C. E., Wabash, Ind.						
Corn and Oats Chop	501	4.3	10.1	4.2	Corn and oats	
Smith Grain & Milling Co., Warsaw, Ind.						
Corn and Oat Chop	802	3.7	9.5	6.0	Corn and oats	
Wheat Middlings	803	3.8	13.5	7.5	Wheat product	
Wheat Bran	804	3.5	12.5	12.0	Wheat product	

¹⁷Succeeded by J. M. Pate & Son.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Smith, Roper & Co., Hobart, Ind.						
Hobart Wheat Bran.....	78	8.5	14.0	10.0		Wheat product
Hobart Wheat Middling.....	79	8.5	14.0	7.0		Wheat product
Hobart Rye Feed.....	80	2.5	14.0	6.0		Rye product
Hobart Wheat Shorts.....	81	4.0	14.0	8.0		Wheat product
Hobart Chop Feed.....	82	3.8	9.5	6.0		Corn and oats
Buckwheat Bran.....	1886	3.0	12.0	33.0		Buckwheat product
Buckwheat Middlings.....	1887	6.9	37.0	5.0		Buckwheat product
Smith & Son, M., Chesterton, Ind.						
Wheat Middlings.....	2427	3.0	14.0	9.0		Wheat product
Wheat Bran.....	2428	3.0	14.0	11.0		Wheat product
Smock & Caca, Noblesville, Ind.						
Bran and Shorts.....	1424	3.8	14.5	10.0		Wheat product
Shorts.....	1425	4.0	14.0	8.0		Wheat product
Smoker, Levi, Michigantown, Ind.						
Corn and Oats Chop.....	1508	3.9	9.0	9.0		Corn and oats
Snoddy, M. W., Covington, R. F. D. No. 1, Ind.						
Wheat Bran and Screenings.....	1071	3.5	13.0	10.0		Wheat bran and screenings
Bran and Middlings.....	1072	3.5	14.0	9.5		Wheat product
Wheat Middlings.....	1073	4.0	14.0	8.0		Wheat product
Snyder, Chas. A., Waynetown, Ind.						
Bran and Shorts.....	48	3.0	10.0	8.0		Wheat product
Mix Mill Feed.....	49	3.0	10.0	8.0		Wheat and corn product
Ground Corn and Oats.....	50	3.0	9.0	2.0		Corn and oats
South Bend Grain Co., South Bend, Ind.						
South Bend Grain Co.'s Chop Feed.....	1376	3.7	9.3	6.0		Corn and oats
South Side Cereal Mills, Fort Wayne, Ind.						
South Side Cereal Mills Wheat Middlings.....	587	4.0	14.0	7.0		Wheat product
South Side Cereal Mills Wheat Bran.....	588	3.7	14.0	10.0		Wheat product
South Side Feed Store, Wabash, Ind.						
Corn and Oats Chop.....	1834	3.9	9.5	7.0		Corn and oats
Southwestern Milling Company, The, Kansas City, Mo.						
K. C. K. Fancy Middlings.....	1563	4.7	14.5	4.2		Wheat product
K. C. K. Shorts.....	1564	5.2	15.5	6.2		Wheat product
K. C. K. Bran.....	1565	5.2	15.0	10.0		Wheat product
Bran.....	2023	4.0	14.0	10.0		Wheat product
South Whitley Mills, South Whitley, Ind.						
Wheat Middlings.....	2140	4.0	14.0	7.0		Wheat product
Chop Feed.....	2141	3.5	9.0	11.0		Corn, oats and corn bran
Wheat Bran.....	2142	3.8	14.0	10.0		Wheat product
Sparks Milling Company, Terre Haute, Ind.						
Wabash Middlings.....	2774	4.0	14.0	7.0		Wheat product
Wabash Bran and Screenings.....	2775	3.5	14.0	11.0		Wheat bran and screenings
Spencer & Co., J. W., Veedersburg, Ind.						
Wheat Bran.....	333	3.0	12.0	14.0		Wheat product
Wheat Shorts.....	334	3.0	12.0	10.0		Wheat product
Mixed Feed.....	335	3.0	12.0	12.0		Wheat product
Chop Feed.....	336	3.0	8.0	10.0		Corn, oats, corn bran and screenings
Spencer Milling Co., Spencer, Ind.						
Spencer Milling Co.'s "Wheat Bran".....	700	3.5	14.0	11.0		Wheat product
Middlings.....	701	3.7	14.0	5.0		Wheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Spink Milling Co., The, Washington, Ind.						
Wheat Bran	459	3.5	12.0	10.0	Wheat product	
Shipstuff	460	3.7	14.0	10.0	Wheat product	
Mixt Feed	461	3.6	12.5	10.0	Wheat product	
Corn Bran	2437	5.0	8.0	13.0	Corn bran	
Spring Mill, Paoli, Ind., R. R. No. 4.						
Mixed Feed	2205	4.0	14.0	10.0	Wheat product	
Spring Mills Co., C. M. Barlow, Kokomo, Ind.						
Bran and Middlings	797	4.0	15.0	9.0	Wheat product	
Spy Run Fuel & Feed Co., Fort Wayne, Ind.						
Wheat Bran	1439	3.8	14.0	10.0	Wheat product	
Wheat Middlings	1490	4.0	14.0	7.0	Wheat product	
Corn and Oats Chop	1491	3.9	9.5	6.0	Corn and oats	
Stall & Co., R. S., Thorntown, Ind.						
Corn and Oat Chop	768	3.9	9.5	6.0	Corn and oats	
Stamp, D. K., Monticello, Ind.						
River Side Mills Buckwheat Bran	1734	3.0	12.0	23.0	Buckwheat product	
Stampers Creek Mill, Paoli, Ind., R. R. No. 3.						
Mixed Feed	2264	3.8	14.0	10.0	Wheat product	
Standard Milling Co., Ireland, Ind.						
Mill Feed	1589	3.0	14.0	10.0	Wheat product and screenings	
St. Anthony Milling Co., St. Anthony, Ind.						
Wheat Bran	990	3.8	14.0	10.0	Wheat product	
Wheat Shorts	991	4.0	14.0	8.0	Wheat product	
Star & Crescent Milling Co., Chicago, Ill.						
Star Red Dog	1328	5.5	15.5	3.5	Wheat product	
Star Middlings	1329	4.0	15.0	7.0	Wheat product	
Star Bran	1330	4.0	14.0	9.0	Wheat product	
Crescent Bran	2000	4.0	14.5	9.5	Wheat product	
Star Mills, C. Cunningham, Proprietor, Mentone, Ind.						
Shorts	2763	4.0	14.0	8.0	Wheat product	
Mixed Feed	2764	3.8	13.0	13.0	Wheat bran, screenings and corn bran	
Star Mill Co., The, Huntingburg, Ind.						
Mixed Feed	45	3.7	13.7	9.0	Wheat product and screenings	
Star Milling Co., The, Aurora, Ind.						
Bran	1083	3.8	14.2	9.5	Wheat product	
Middlings	2672	4.0	14.6	6.0	Wheat product	
Mixed Feed	2675	4.0	13.5	12.0	Wheat bran, middlings and corn bran	
Star Milling Co., Shoals, Ind.						
Star Wheat Bran	508	3.8	14.0	10.0	Wheat product	
Star Shorts	508	4.0	14.0	8.0	Wheat product	
Star Mixed Feed	504	3.5	12.0	12.0	Wheat and corn product	
Star Roller Mills, The, Burlington, Ind.						
Wheat Bran	1237	3.8	14.0	10.0	Wheat product	
Wheat Shorts	1238	4.0	14.0	8.0	Wheat product	
Star Supply Co., Elkhart, Ind.						
Star Chop Feed	2336	3.9	9.5	7.0	Corn and oats	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
St. Clair Roller Mills, Fort Recovery, Ohio.						
St. Clair Roller Mills Wheat Bran.....	1743	3.7	14.0	10.0		Wheat product
St. Clair Roller Mills Wheat Middlings.....	1744	4.0	14.0	7.0		Wheat product
Steck, E. B., Muncie, Ind.						
Steck's Chop	918	3.9	9.5	6.0		Corn and oats
Steckley, George, Kendallville, Ind.						
Chop Feed	405	4.0	10.0	6.0		Corn and oats
Wheat Bran	1623	3.8	14.0	10.0		Wheat product
Wheat Middlings	1624	4.0	14.0	7.0		Wheat product
Steele & Co., Geo. W., Marion, Ind.						
Bran and Middlings.....	87	3.9	14.0	9.0		Wheat product
Chop Feed	88	3.0	9.0	6.0		Corn and oats
Wheat Middlings	89	3.1	14.3	7.0		Wheat product
Steinball & Velceine Milling Co., Orisole, Ind.						
Bran	1908	3.5	14.0	10.0		Wheat product
Shipstuff	1904	3.8	14.0	8.0		Wheat product
Steinheilber Milling Co., Hartford City, Ind.						
Mixed Bran and Middlings	1917	4.0	14.0	8.0		Wheat product
Steinheilbers Chop	1918	3.9	9.5	9.0		Corn, oats and corn bran
Bran	1919	3.8	14.0	10.0		Wheat product
Steinheilber & Ross Milling Co., Hartford City, Ind.						
Middlings	2621	3.5	13.0	7.0		Wheat product
Mixed Feed	2734	3.5	13.0	13.0		Wheat bran, middlings, screenings and corn bran
Stepanek, Peter, Modoc, Ind. ¹⁸						
Stepanek's Wheat Bran and Shorts.....	130	4.0	16.7	6.8		Wheat product
Stewart, H., Terre Haute, Ind.						
Stewart's Mixed Feed.....	2198	4.0	10.0	10.0		Wheat bran, corn, corn bran and oats
Stonehead Roller Mills, Stonehead, Ind.						
Mixed Feed	1573	3.7	14.0	8.0		Wheat product
Stone Quarry Mills, Spiceland, Ind.						
Mixed Feed	1497	3.9	14.0	8.0		Wheat product
Stoudt, Thomas, South Bend, Ind.						
Thos. Stoudt's Wheat Middlings.....	277	5.0	15.4	5.0		Wheat product
Mixed Chop Feed.....	2035	6.0	9.0	10.0		Corn, oats, rye and hominy feed
Stoudt's Chop Feed.....	2119	3.5	9.0	9.0		Corn, oats and corn bran
Thos. Stoudt's Wheat Bran.....	2234	3.3	14.5	10.0		Wheat product
Stout, Harry T., Crawfordsville, Ind.						
Stout's Chop Feed	505	3.9	9.5	6.0		Corn and oats
Street Milling Co., J., LaPorte, Ind.						
Corn and Oats Chop Feed.....	760	3.9	9.5	6.0		Corn and oats
Wheat Middlings	761	4.0	14.0	5.0		Wheat product
Wheat Bran.....	762	3.8	14.0	10.0		Wheat product
Wheat and Corn Bran.....	2129	4.0	12.0	8.0		Wheat and corn product
Mixed Feed	2737	3.9	14.0	10.0		Wheat bran and middlings
Studebaker Mills, Farmland, Ind.						
Mixed Bran and Middlings.....	1790	3.9	14.0	9.0		Wheat product
Chop Feed	2636	3.9	9.5	11.0		Corn, oats, corn bran and buckwheat bran
Studebaker & Son, John, Bluffton, Ind.						
Corn and Oats Chop.....	1948	3.9	9.5	6.0		Corn and oats

¹⁸Succeeded by Daisy Mills & Elevator of Modoc. Modoc.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent.	Crude Fat	Not less than per cent.	Crude Protein	
Studler Bros., Linn Grove, Ind. Chop Feed	2452	3.9	8.2	10.0		Corn, oats and corn bran
Suckow, Wm., Franklin, Ind. Mixed Feed	18	4.0	12.4	9.5		Wheat and corn product and wheat screenings
Middlings	14	4.0	14.0	8.0		Wheat product
Wheat Bran	15	3.8	14.0	10.0		Wheat product
Sullivan Mill & Elevator Co., Sullivan, Ind. Ground Wheat and Corn	1087	4.0	10.0	6.0		Wheat and corn
Wheat Shorts	1088	4.0	14.0	8.0		Wheat product
Bran and Shorts	1089	3.9	14.0	10.0		Wheat product
Mixed Bran	1108	3.7	14.0	10.0		Wheat and corn product
Mixed Feed	2758	3.4	12.0	10.0		Wheat bran, shorts, screenings, and corn bran
Corn and Oats Chop	2059	3.5	9.0	6.0		Corn and oats
Sunlight Milling Co., Mt. Vernon, Ind. Sunlight Milling Co.'s Wheat Middlings	722	4.0	14.0	7.0		Wheat product
Sunlight Milling Co.'s Wheat Bran	723	3.8	14.0	10.0		Wheat product
Corn Bran	2050	5.0	8.0	10.0		Corn bran
Mixed Feed	2891	3.5	13.5	12.0		Wheat bran and screenings
Sutton, E. S., Van Buren, Ind. Corn and Oats Chop	1949	3.9	9.0	8.0		Corn, oats and corn bran
Swayzee, Mark L., Marion, Ind. Corn and Oats Chop	683	3.0	9.0	6.0		Corn and oats
Bran and Shorts	683	3.0	14.0	8.0		Wheat product
Sweet, W. G., Royal Center, Ind. Sweet's Corn and Oat Chop	704	3.9	9.5	6.0		Corn and oats
Sweet's Corn, Rye and Oat Chop	2597	3.5	9.0	6.0		Corn, rye and oats
Switz City Milling Co., Switz City, Ind. Switz City Milling Co.'s Wheat Bran	679	3.7	13.0	10.0		Wheat product
Switz City Corn and Oats	1611	3.0	9.0	6.0		Corn and oats
Mixed Feed	2101	3.5	10.0	13.0		Wheat and corn product
Switz City Milling Co.'s Wheat Shorts	678	4.0	13.0	7.5		Wheat product
Tapp & Bridwell, Bloomington, Ind. Mixed Feed	54	4.0	14.0	10.0		Wheat bran, middlings, screenings and corn bran
Taylor, Edward, Montmorenci, Ind. Middlings	2207	4.0	14.0	8.0		Wheat product
Bran	2208	3.8	14.0	11.0		Wheat product
Taylor, John H., Ogilville, Ind. Taylors Mixed Feed	801	3.8	14.0	10.0		Wheat product
Taylor Feed Exchange, Allen, Fort Wayne, Ind. Corn and Oats Chop	2361	3.5	9.0	6.0		Corn and oats
Taylor Feed Mill, J. P., Jonesboro, Ind. Chop Feed	2334	3.5	9.0	6.0		Corn, oats and corn bran
Taylor-Hitz Co., Madison, Ind. Middlings	413	4.0	14.0	7.0		Wheat product
Bran	414	3.7	14.0	10.0		Wheat and corn bran
Tecumseh Milling Co., Tecumseh, Neb. Middlings	2033	5.1	15.0	5.9		Wheat product
Tec. Mlg. Co. Bran	2034	3.1	13.0	11.0		Wheat product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Teeter Mill & Elevator Co., Hagerstown, Ind.					
Teeters Corn and Oats Chop.....	592	3.3	7.0	16.0	Corn and oats
Teeters Wheat Middlings.....	593	3.7	14.0	7.0	Wheat product
Teeters Wheat Bran.....	594	3.2	12.0	10.0	Wheat product
Tegart & Co., J., New Albany, Ind.					
Peerless Feed.....	834	4.0	14.0	8.0	Wheat product
Wheat Bran.....	1174	4.4	15.2	8.4	Wheat product
Tell City Flouring Mills, Tell City, Ind.					
Bran.....	441	3.8	14.0	10.0	Wheat and corn product
Mixed Feed.....	2256	4.0	14.0	9.7	Wheat bran, middlings, shipstuf, screenings and corn bran
Shipstuf.....	2400	4.5	14.7	7.5	Wheat product
Terrill & Cooper, Arcanum, Ohio.					
Wheat Bran.....	1894	3.2	12.0	11.0	Wheat product
Wheat Middlings.....	1895	4.0	12.0	6.2	Wheat product
Thomas, A. R., Markle, Ind.					
Thomas' Wheat Bran.....	617	3.3	14.0	9.5	Wheat product
Thomas' Bran and Middlings.....	618	3.8	14.1	8.0	Wheat product
Thomas' Chop (Corn and Oats).....	619	3.8	9.5	7.5	Corn and oats
Thomas' Wheat Middlings.....	620	4.0	14.1	7.0	Wheat product
Wheat Shorts.....	2108	3.2	14.1	8.0	Wheat product
Corn, Oats and Rye Chop.....	2104	3.2	9.5	9.0	Corn, oats and rye
Thompson, Joseph, Prairie Creek, Ind.					
Mixed Wheat and Corn Bran.....	1106	3.1	14.2	10.0	Wheat product and corn bran
Thompson's Wheat Shorts.....	2001	3.8	14.9	7.4	Wheat product
Thornburg Milling & Elevator Co., Martinsville, Ind.					
Shorts.....	656	3.2	12.5	5.2	Wheat product
Bran.....	656	3.2	14.0	10.1	Wheat product
Mixed Feed.....	2050	3.5	14.0	8.0	Wheat bran, shorts, corn bran and dust collector bran
Thurgood, Geo. R., Vincennes, Ind.					
Mixed Feed.....	1537	3.2	14.0	9.0	Wheat product
Bran.....	1538	3.8	14.0	10.0	Wheat product
Shorts.....	1539	4.0	14.0	8.0	Wheat product
Thurgood's Mixed Feed.....	1806	3.5	12.0	11.0	Wheat bran, screenings and corn bran
Thurston, B. F., Darlington, Ind.					
Mixed Feed, Mill Run.....	562	3.5	12.0	10.0	Wheat product, screenings and corn bran
Tippecanoe Mill, Monticello, Ind.					
Chop Feed.....	2214	3.0	9.5	7.0	Corn, oats and rye
Middlings.....	2215	3.8	12.0	7.0	Wheat product
Mixed Feed.....	2216	4.0	18.0	20.0	Buckwheat product
Bran and Screenings.....	2217	3.0	11.0	9.0	Wheat product and screenings
Toner, A. D., Kewanna, Ind.					
Corn and Rye Chop.....	1455	4.0	12.0	4.0	Corn and rye
Topeka Milling Co., Topeka, Ind. ¹⁰					
Topeka Milling Co.'s Middlings.....	1198	4.0	14.0	7.0	Wheat product
Topeka Milling Co.'s Chop Feed.....	1194	3.2	9.5	6.0	Corn and oats
Topeka Milling Co.'s Wheat Bran.....	1195	3.8	14.0	10.0	Wheat product
Corn Bran.....	2254	5.0	9.0	13.0	Corn product
Trafalgar Elevator Co., The, Trafalgar, Ind.					
Mixed Feed.....	3005	3.0	9.0	12.0	Corn bran, corn screenings and wheat screenings

¹⁰Succeeded by Burrell & Kulp.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Travis & Co., Kingsbury, Ind. Wheat Bran	2734	3.9	14.0	11.0		Wheat product
Tresselt & Sons, C., Fort Wayne, Ind. Chop Feed	408	2.9	9.5	6.0		Corn and oats
Wheat Bran	409	2.8	14.0	10.0		Wheat product
Wheat Shorts	410	4.0	14.0	8.0		Wheat product
Wheat Middlings	411	4.0	14.0	7.0		Wheat product
Trimble Milling Co., The, Milton, Ky. Wheat Bran	1988	3.8	14.0	10.0		Wheat product
Shipstuf	1989	4.0	14.0	7.0		Wheat product
Tobrocke, Henry, Waymansville, Ind. Wheat Bran	1968	3.8	14.0	10.0		Wheat product
Wheat Shorts	2109	2.5	12.0	7.0		Wheat product
Troup, Irvin, Milford, Ind. Chop Feed	2817	2.5	9.0	8.0		Corn and oats
Trow Company, W., Madison, Ind. Trow's Mixed Feed	1905	4.0	14.0	3.5		Wheat product and screenings
Trow's Middlings and Screenings	1972	4.5	16.0	7.0		Wheat product and screenings
Trow's Bran and Screenings	1973	3.5	14.0	10.0		Wheat product and screenings
Truitt & Sons, Wm. P., East Enterprise, Ind. Bran and Shorts	1258	3.8	14.0	10.0		Wheat product
Middlings	1259	4.0	14.0	7.0		Wheat product
Tull's Department Store, Monon, Ind. Wheat Bran	1423	3.8	14.0	10.0		Wheat product
Wheat Middlings or Shorts	1578	5.3	19.9	8.0		Wheat product
Tunnelton Milling Co., Tunnelton, Ind. Chop Feed	1550	2.5	9.0	8.0		Wheat, corn and oats
Mixed Feed	1557	2.9	14.0	8.0		Wheat product
Tuthill, W. H., Crown Point, Ind. Corn and Oats Chop	2733	3.5	9.0	10.0		Corn and oats
Tuttle & Co., R., Columbia City, Ind. Perfection Chop Feed	816	3.9	9.5	6.0		Corn and oats
Perfection Bran	817	3.8	14.0	10.0		Wheat product
Perfection Middlings	818	4.0	14.0	7.0		Wheat product
Uhl & Company, Dennis, Logansport, Ind. Corn and Oats Chop	1830	4.0	9.0	8.0		Corn, oats and corn bran
Uhl's Wheat Middlings	2084	4.0	15.0	6.0		Wheat product
Uhl's Wheat Bran	2085	3.5	15.0	10.0		Wheat product
Uhl & Snider, Connersville, Ind. Uhl & Snider's Wheat Bran	583	3.2	12.0	10.0		Wheat product
Uhl & Snider's Wheat Middlings	583	3.7	14.0	7.0		Wheat product
Ulrey & Co., A. A., Fairmount, Ind. Ulrey's Wheat Bran	455	3.8	14.0	10.0		Wheat product
Ulrey's Wheat Middlings	457	4.0	14.0	7.0		Wheat product
Corn and Oats Chop	1549	3.9	9.0	9.0		Corn, oats and corn bran
Ulrey's Mixed Feed	2837	3.2	13.0	8.0		Wheat bran, middlings and screenings
Ulrich & Son, Levi, Greensboro, Ind. Wheat Bran	574	4.0	15.4	9.0		Wheat product
Wheat Shorts	575	4.5	14.9	7.4		Wheat product
Corn Bran	2061	5.5	8.5	12.0		Corn product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Union City Milling Co., Union City, Ind.						
Chop Feed	1704	8.3	8.8	10.0	Corn, oats and wheat screenings	
Wheat Bran	1705	8.5	14.1	7.5	Wheat product	
Wheat Shorts	1706	8.0	18.1	9.5	Wheat product	
Union Grain & Coal Co., Anderson, Ind.						
Union Middlings	1645	8.8	18.8	7.0	Wheat product	
"Union" Mixed Feed	1646	8.0	10.0	8.0	Wheat, corn, oats, oat hulls, corn bran and wheat screenings	
"Union" Bran	1647	8.8	14.0	10.0	Wheat product	
Valentine & Valentine, Franklin, Ind.						
Middlings	983	4.0	14.0	7.0	Wheat product	
Wheat Bran	983	3.8	14.0	10.0	Wheat product	
Mixed Feed	984	4.0	12.4	7.0	Wheat product, corn and screenings	
Corn Bran	1909	3.9	6.9	11.0	Corn product	
Valter & Spies Milling Co., St. Louis, Mo.						
Valter's Mixed Feed	889	4.0	15.0	9.0	Wheat product	
Wheat Bran	1983	3.5	14.0	10.0	Wheat product	
Wheat Middlings	1976	4.0	15.0	7.0	Wheat product	
Valparaiso Grain & Elevator Co., Valparaiso, Ind.						
Wheat Bran	1408	3.8	14.0	10.0	Wheat product	
Corn and Oats Chop	1408	3.5	9.0	9.0	Corn and oats	
Wheat Shorts	1405	4.0	14.0	8.0	Wheat product	
Red Dog Flour	1406	2.0	16.0	1.7	Wheat product	
Van Camp Milling Co., The, Decatur, Ind.						
Wheat Bran	2650	4.0	15.4	9.0	Wheat product	
Wheat Shorts	2651	4.5	14.9	7.4	Wheat product	
Corn and Oats Chop	2679	3.9	9.5	6.0	Corn and oats	
Van Houten, J. S., Garrett, Ind.						
Corn and Oats Chop	1674	3.9	9.5	6.0	Corn and oats	
Wheat Middlings	1675	4.0	14.0	7.0	Wheat product	
Wheat Bran	1676	3.8	14.0	10.0	Wheat product	
Veirs & Wicks, Rochester, Ind.						
Veirs & Wicks' Wheat Bran	319	3.0	14.0	10.0	Wheat product	
Veirs & Wicks' Wheat Middlings	320	4.0	14.0	7.0	Wheat product	
Veirs & Wicks' Chop Feed	321	4.0	10.0	5.0	Corn and oats	
Vessely & Borkovec, North Judson, Ind.						
Rye Bran	1323	2.5	14.0	5.0	Rye product	
Rye Middlings	1324	4.0	14.0	7.0	Rye product	
Buckwheat Hulls and Middlings	2166	3.0	12.0	30.0	Buckwheat product	
Wheat Middlings	2685	3.5	14.0	8.0	Wheat product	
Wheat Bran	2686	3.0	13.0	10.0	Wheat product	
Vevay Flour Mills, Vevay, Ind.						
Mixed Feed	1261	3.7	14.0	10.0	Wheat product and chaff	
Victor Milling Co., Terre Haute, Ind.						
Chop Feed	1022	3.8	11.0	6.5	Corn, oats and wheat bran	
Pure Winter Wheat Bran	2066	3.8	14.0	10.0	Wheat product	
Victoria Milling Co., Jasper, Ind.						
Victoria Wheat Bran	795	3.8	14.0	10.0	Wheat product	
Victoria Wheat Shorts	796	4.0	14.0	8.0	Wheat product	
Mixed Feed	2008	3.5	14.0	8.0	Wheat product	
Volland Milling Co., The, Fort Wayne, Ind.						
Volland's Number One Chop Feed	256	3.9	9.5	6.0	Corn and oats	
Volland's Wheat Bran	257	3.8	14.0	10.0	Wheat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Volland Milling Co., The, Fort Wayne, Ind.						
Vollands Chop Feed.....	809	8.9	8.0	10.0		Corn, oats and corn product
Mill Sweepings.....	2135	1.0	1.0	5.0		Mill sweepings
Wheat Middlings.....	2888	9.0	10.0	25.0		Wheat product
Vorhls & Vorhls, Syracuse, Ind. ²⁰						
Mixed Feed.....	2906	8.7	18.5	12.0		Wheat bran, screening and corn bran
Shorts.....	2907	8.7	18.8	7.0		Wheat product
Chop Feed.....	2908	8.5	9.0	7.0		Corn and oats
Wabash Milling Co., The, Wabash, Ind.						
Bran.....	1	8.7	14.0	10.0		Wheat product
Middlings.....	2	4.0	14.0	7.0		Wheat product
Chop Feed.....	997	8.8	9.4	6.0		Corn and oats
Mixed Feed.....	1267	8.0	18.0	7.0		Wheat product, screenings and corn bran
Wakarusa Milling Co., Wakarusa, Ind.						
Wakarusa Wheat Middlings.....	1243	4.5	15.0	7.0		Wheat product
Wakarusa Wheat Bran.....	1249	8.8	14.0	10.0		Wheat product
Walden, Sam, West Terre Haute, Ind.						
Corn Grit.....	845	4.8	9.0	2.0		Corn product
Walker & Co., Peter M., Loogootee, Ind.						
Wheat Middlings.....	533	4.0	14.2	5.7		Wheat product
Bran and Screenings.....	539	8.6	14.0	10.5		Wheat product and screenings
Walker & Norris, Washington, Ind.						
Walker & Norris Wheat Bran and Middlings.....	313	4.0	14.7	8.0		Wheat product
Corn Bran.....	2567	8.0	6.0	19.0		Corn product
Wheat Bran.....	2568	8.0	18.5	9.0		Wheat product
Wheat Middlings.....	316	6.0	15.4	5.0		Wheat product
Wallace Milling Co., The, Dale, Ind.						
Wallace's Mixed Feed.....	172	8.9	14.2	10.0		Wheat product and 5% screenings.
Walton & Whisler, Atlanta, Ind.						
Mixed Feed.....	110	8.8	14.0	10.0		Wheat product
Chop Feed.....	111	8.7	9.5	8.5		Corn and oats
Waltz & Co., J. W., New Palestine, Ind.						
New Palestine Wheat Middlings.....	685	8.0	12.0	5.0		Wheat product
Mixed Feed.....	2023	8.7	13.0	12.0		Wheat bran, screenings and corn bran
Wanatah Roller Mills, Wanatah, Ind.						
Mitzners Wheat Bran.....	1950	8.5	13.5	10.0		Wheat product
Mitzners Middlings.....	1951	4.0	14.0	8.0		Wheat product
Chop Feed.....	2384	8.5	9.0	8.0		Corn and oats
Buckwheat Bran and Middlings.....	2725	2.5	10.0	33.0		Buckwheat product
Washburn-Crosby Co., Minneapolis, Minn.						
Washburn-Crosby Co.'s Flour Middlings.....	784	5.0	17.0	6.0		Wheat product
Washburn-Crosby Co.'s "Adrian".....	785	5.0	18.0	4.0		Wheat product
Washburn-Crosby Co.'s Rye Middlings.....	2174	8.0	14.0	5.0		Rye product
Washburn-Crosby Co.'s Coarse Bran.....	2508	4.0	14.5	11.0		Wheat product
Washburn-Crosby Co.'s Standard Middlings.....	2508	4.0	15.0	8.0		Wheat product
Washburn-Crosby Milling Co., Inc., Louisville, Ky.						
Pure Shorts.....	2937	4.0	14.5	7.0		Wheat product
Pure Bran.....	2938	4.0	14.5	9.5		Wheat product
Mixed Feed.....	2939	4.0	14.5	8.0		Wheat bran and shorts

²⁰Succeeded by Frank Bailey.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Waterloo Mills, The, Waterloo, Ind. The Waterloo Mills Mixed Feed.....	168	4.0	14.0	8.0	Wheat product
The Waterloo Mills Corn and Oat Chop.....	169	3.9	9.5	7.0	Corn and oats
The Waterloo Mills Wheat Bran.....	170	3.8	14.0	10.0	Wheat product
Buckwheat Mixed Feed.....	1955	4.0	15.0	20.0	Buckwheat product
Watson Milling Co., Corydon, Ind. Bran	2651	4.0	15.4	9.0	Wheat product
Middlings	2652	4.0	15.4	5.0	Wheat product
Way, C. B., LaPorte, Ind. Way's Corn and Oats Chop.....	2131	3.5	9.5	8.0	Corn and oats
Wayman, Guy, Dunkirk, Ind. Wayman's Chop Feed.....	393	3.0	9.0	6.5	Corn and oats
Weber, Robert, Patoka, Ind. ²¹ Wheat Shorts	1100	4.0	14.0	8.0	Wheat product
Mixed Feed	1101	3.0	13.0	11.0	Wheat and corn product
Wellington & Son, Anderson, Ind. Wellington's A X A Bran.....	74	3.8	15.7	10.0	Wheat product
Wellington's "A X A" Mixed Feed.....	75	4.0	15.0	8.0	Wheat product
Wellington's A X A Corn and Oats Chop	76	3.5	10.0	4.0	Corn and oats
Wellington's A X A Middlings.....	77	4.0	15.0	6.0	Wheat product
Mixed Bran	1738	3.9	14.0	11.0	Wheat and corn product
West Baden Milling Co., West Baden, Ind. Wheat Bran	1010	3.8	14.0	10.0	Wheat product
Wheat Shorts	1011	4.0	14.0	8.0	Wheat product
Mixed Feed	1012	4.8	16.5	15.0	Wheat bran, shorts and corn bran
West Middleton Mill & Elevator Co., West Middleton, Ind. West Middleton Mill & Elevator Co.'s Corn and Oat Chop.....	302	3.5	9.0	7.0	Corn and oats
West Middleton Mill & Elevator Co.'s Wheat Bran and Shorts Mixed.....	303	3.8	14.0	10.0	Wheat product
West Middleton Mill & Ele. Co.'s Red Dog Flour.....	2002	1.5	12.0	7.0	Wheat product
Western Flour Mill Co., Davenport, Iowa. Black Hawk Wheat Bran.....	2440	4.7	14.0	10.5	Wheat product
Black Hawk Standard Middlings.....	2441	4.7	16.0	7.2	Wheat product
Bran	2333	4.0	15.5	10.0	Wheat product
Westphalia Mill & Elevator Co., Westphalia, Ind. Mill Feed	226	3.7	13.5	10.4	Wheat product and corn bran
Mixt Feed	1292	3.0	10.5	6.0	Corn, oats and screenings
Whisler, H. F., Reserve, Ind. Mixed Bran	1599	3.3	13.0	12.0	Wheat and corn product
Corn and Oats Chop.....	1670	3.9	9.5	6.0	Corn and oats
White Bros., LaPorte, Ind. Wheat and Rye Bran.....	1293	3.5	14.0	10.0	Wheat and rye product
Corn and Oats Chop.....	1294	3.9	9.5	6.0	Corn and oats
Buckwheat Bran	1295	3.0	12.0	33.0	Buckwheat product
Wilber & Co., C. H., Brazil, Ind. Wilbers Mixed Feed.....	2626	4.0	10.0	10.0	Wheat bran, corn, hominy feed, oats, screenings and sucrose

²¹Succeeded by R. P. Lockhart.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Wildcat Roller Mills, Cutler, Ind.						
Wheat Shorts	1091	4.0	14.0	8.0	Wheat product	
Wheat Bran	1098	3.8	14.0	10.0	Wheat product	
Wilkinson & Co., T. B., Knightstown, Ind.						
Middlings	119	3.5	14.0	7.0	Wheat product	
Bran	120	3.2	12.0	10.0	Wheat product	
Mixed Mill Feed	121	3.5	13.0	8.0	Wheat and corn product	
Willey Mill & Elevator Co., Ross, Ohio.						
Wheat Bran	851	3.7	14.0	10.0	Wheat product	
Wheat Middlings	859	3.7	14.0	5.5	Wheat product	
Williams, F. C., Sellersburg, Ind.,						
Wheat Bran	215	3.8	14.0	10.0	Wheat product	
Wheat Middlings	216	4.0	14.0	7.0	Wheat product	
Williams, Thos. L., Muncie, Ind.						
William's Chop Feed	948	3.9	9.5	6.0	Corn and oats	
Williams & Sons, T. W., Upland, Ind.						
Eureka Feed	1220	4.2	10.0	6.0	Corn and oats	
Excelsior Feed	1221	3.8	12.0	8.0	Corn, oats and rye	
Williams Milling Co., Williams, Ind.						
Williams Milling Co.'s Mixed Feed	135	3.9	13.0	9.0	Wheat product, screenings and corn bran	
Williamson & Co., J. H., Muncie, Ind.						
Corn and Oats Chop	1459	3.9	9.5	6.0	Corn and oats	
Williamsport Milling Company, Williamsport, Ind.						
Wheat Bran and Middlings	1411	3.9	14.1	8.5	Wheat product	
Middlings	2012	3.9	14.1	8.3	Wheat product	
Mixed Feed	2013	3.8	14.0	8.0	Wheat bran, middlings and corn bran	
Wheat Bran	2173	3.9	14.0	10.2	Wheat product	
Willson, Wm. D., Osgood, Ind.**						
Willson's Wheat Shorts	107	3.0	13.0	10.0	Wheat product	
Willsons Mixed Feed	1077	2.0	8.0	20.0	Wheat bran and screenings	
Willson & Greene, Darlington, Ind.						
Mixed Feed	2767	3.5	13.0	10.0	Wheat bran, shorts, screenings and corn bran	
Wimer, Brown Co., Auburn, Ind.						
Corn and Oats Chop	2513	3.8	9.0	7.0	Corn and oats	
Windfall Grain Co., Windfall, Ind.						
Chop Feed	2388	3.9	9.5	8.0	Corn, oats and corn bran	
Wingard & Rapp, Syracuse, Ind.						
Chop Feed	2357	3.0	9.0	7.0	Corn, oats, rye and corn bran	
Winkler, Geo. W., Freelandville, Ind.						
Winkler Wheat Bran	311	3.8	14.0	10.0	Wheat Product	
Winkler Wheat Shorts	312	4.0	14.0	8.0	Wheat product	
Winkler Mixed Feed	1000	4.0	14.1	9.0	Wheat product, screenings, corn bran and low grade flour	
Winslow Milling Co., Winslow, Ind.						
Pike's Wheat Bran and Middlings	2365	3.8	14.0	9.2	Wheat product	
Wisman Milling Co., M. E., Angola, Ind.						
Wheat Bran	2547	3.8	14.0	10.0	Wheat product	
Wheat Middlings	2549	4.0	14.0	7.0	Wheat product	

**Succeeded by Geo. D. Ruoff.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Witmer Grain Co., Grabill, Ind. Corn and Oats Chop.....	1877	3.9	9.5	6.0		Corn and oats
Wheat Middlings	1879	4.0	14.0	7.0		Wheat product
Wheat Bran	2040	3.5	14.0	10.0		Wheat product
Witt, J. W., Lebanon, Ind. Corn and Oats Chop.....	637	3.9	9.5	6.0		Corn and oats
Wolcottville Elevator Co., Wolcottville, Ind. Chop Feed	2277	3.0	9.5	6.0		Corn, oats and rye
Wood, N., Deep River, Ind. Mixed Wheat Bran and Shorts.....	1419	3.8	14.0	10.0		Wheat product
Mixed Buckwheat Bran and Shorts.....	1418	3.0	12.0	33.0		Buckwheat product
Wood & Co., P. O., Syracuse, Ind. ²² Wheat Middlings	1597	4.0	14.0	7.0		Wheat product
Corn and Oats Chop.....	1598	3.9	9.5	7.0		Corn, oats and corn bran
Wheat Bran	1599	3.8	14.0	10.0		Wheat product
Woodburn Elevator & Milling Co., Woodburn, Ind. Wheat Bran	746	3.8	14.0	10.0		Wheat product
Wheat Middlings	747	4.0	14.0	7.0		Wheat product
Chop Feed	748	3.9	9.5	6.0		Corn and oats
Worsham & Miller, Pakerton, Ind. Wheat Bran, Wheat Middlings and Wheat Shorts	2457	3.6	14.0	10.0		Wheat product
Wright Milling Co., Paris Crossing, Ind. Shipstuff	151	4.0	14.0	8.0		Wheat product
"A" Mixed Feed	2508	3.8	14.0	10.0		Wheat bran, middlings and screenings
Corn Bran	2849	4.0	7.0	11.0		Corn product
Yohn & Strombeck, North Webster, Ind. Wheat Shorts	2408	3.5	13.5	7.0		Wheat product
Wheat Bran	2404	3.8	14.0	10.0		Wheat product
Yost, W. H., South Bend, Ind. Chop Feed	3227	3.5	9.0	8.0		Corn and oats
Youngs Creek Milling Co., Youngs Creek, Ind. Mixed Feed	1908	3.3	13.0	9.0		Wheat product
Zabel & Son, Lanesville, Ind. Zabel & Son's Mill Feed.....	892	3.8	14.0	10.0		Wheat product
Zehner, S. V., Monterey, Ind., Wheat Bran	1461	3.8	14.0	10.0		Wheat product
Wheat Middlings	1463	4.0	14.0	7.0		Wheat product
Zehner Milling Co., Plymouth, Ind. Wheat Middlings	1420	4.0	14.0	7.0		Wheat product
Corn and Oats Chop.....	1480	3.9	9.5	6.0		Corn and oats
Wheat Bran	1481	3.8	14.0	10.0		Wheat product
Buckwheat Bran	1439	3.0	12.0	33.0		Buckwheat product
Zilliak & Schafer Milling Co., Haubstadt, Ind. Zilliak's Mixed Feed.....	276	3.7	14.0	10.0		Wheat product and screenings

²²Succeeded by Wingard & Rapp.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Zillak & Schafer Milling Co., Evansville, Ind. Shipstuff, made of Wheat.....	1126	4.3	17.0	3.0		Wheat product
Bran	1101	3.6	14.5	10.1		Wheat product
2 — MISCELLANEOUS CHOP FEED, CONTAINING CORN AND COB MEAL (Crushed Ear Corn)						
Ballard, Stahl & Co., Worthington, Ind. Bran and Corn Product.....	9434	3.0	10.0	10.0		Wheat bran, corn and cob meal
Boehmer & Ritzler, Scott, Ind. Corn and Oats Chop.....	1626	3.3	3.5	15.0		Corn and cob meal and oats
Brown, W. W., Goshen, Ind. Favorite Feed	2500	3.5	3.0	13.0		Corn and cob meal and oats
Chelsea Mills, Chelsea, Ind. Corn and Oats Feed.....	1200	3.5	3.7	17.0		Corn and cob meal and oats
Dilley & Co., C. L., Logansport, Ind. Dilley's Dairy Feed.....	524	4.3	3.0	6.5		Corn and cob meal, oats and corn bran
Dyer Milling Co., Dyer, Ind. Chop Feed	1254	3.0	9.0	5.0		Corn and cob meal and oats
Enterprise Feed Mill, Princeton, Ind. Mixed Feed	1942	3.0	11.0	9.0		Corn and cob meal, wheat bran and middlings
Ferver, C. V., Knox, Ind.** Ferver's Ground Feed.....	1991	3.0	7.3	30.0		Corn and cob meal, oats and rye
Forrest Park Mills, Terre Haute, Ind. Chop Feed	2220	3.5	9.5	10.0		Corn and cob meal and wheat bran
Friedrich & Son, C. W., Dyer, Ind. Friedrich's Chop Feed.....	3714	3.0	9.0	13.0		Corn and cob meal and oats
Gregory Feed Mill, Franklin S., Washington Ind. Mixed Feed	2175	2.3	3.0	13.0		Corn and cob meal and wheat product
Hanover Mills, Hanover, Ind. Corn and Oats Feed.....	1232	3.4	3.3	20.0		Corn and cob meal and oats
Jeffries Feed Mill, Walter, Riley, Ind., R. B. No. 1. Chop Feed	2374	3.0	3.5	9.0		Corn and cob meal, oats and corn bran
Manja, Charles, Kingsbury, Ind. Corn and Oats Chop.....	1320	3.0	3.0	10.0		Corn and cob meal and oats
Ripple Milling Co., Mishawaka, Ind. Chop Feed	2300	3.3	3.0	13.0		Corn and cob meal and oats
Robinson, J. J., Valparaiso, Ind. Chop Feed	2153	3.0	3.5	13.0		Corn and cob meal and oats
Ruoff, George D., Osgood, Ind. Mixed Feed	2370	3.5	9.5	10.0		Corn and cob meal and wheat bran
Shaffer Feed Store, (C. C. Shaffer), Indianapolis, Ind. Shaffer Mixed Feed.....	1433	2.0	9.0	6.0		Corn and cob meal, oats and corn bran

**Succeeded by George W. Ferver.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Smeltzly, I. Anson, Ontario, Ind. Corn and Oat Chop	1607	3.5	8.5	15.0		Corn and cob meal and oats
Smock & Caca, Noblesville, Ind. Mixed Feed	2533	3.7	9.8	8.0		Corn and cob meal, oats and corn bran
Toner, A. D., Kewanna, Ind. Chop Feed	1454	3.0	8.0	18.0		Corn and cob meal and oats
Wakarusa Milling Co., Wakarusa, Ind. Weldy's Chop	1586	3.5	8.0	12.0		Corn and cob meal and oats
Walker & Co., Peter M., Loogootee, Ind. Mixed Feed	537	3.7	13.5	8.0		Corn and cob meal, wheat product and oats
3—CORN AND COB SCREENINGS						
Union Grain & Coal Co., Anderson, Ind. Union Corn and Cob Chop	1880	0.5	2.4	33.0		Corn and cob screenings
4—HOMINY MEALS, FEEDS AND CHOPS						
American Hominy Co., Indianapolis, Ind. Homco	716	7.7	8.5	5.0		Corn product
Bishopp Hominy Co., Sheldon, Ill. Hominy Feed	2283	7.5	9.0	5.0		Corn product
Conroy, M. A., Jeffersonville, Ind. Hominy Meal	1191	7.0	9.0	6.0		Corn product
Eberts & Bro., Jeffersonville, Ind. Hominy Meal	1890	7.0	9.0	6.0		Corn product
Eberts & Bro., North Vernon, Ind. Hominy Feed	2018	7.5	10.0	3.8		Corn product
Eberts Hominy Feed	2544	8.0	11.0	5.0		Corn product
Eberts Grain Co., Nabb, Ind. Hominy Meal	1856	7.0	9.0	4.0		Corn product
Elevator Milling Co., Springfield, Ill. Hominy Feed	2514	7.5	10.0	3.8		Corn product
Emison & Co., J. & S., (Baltic Mills), Vincennes, Ind. Hominy Feed	2848	9.1	9.1	6.0		Corn product
Enos & Lee, New Albany, Ind. ²⁵ Hominy Feed	986	7.0	10.0	11.0		Corn product
Evans Milling Co., The, Indianapolis, Ind. Hominy Feed	20	7.5	10.0	5.0		Corn product
Ewing Mill Co., The, Brownstown, Ind. Hominy Meal	206	7.5	9.0	6.0		Corn product
Firth Roller Mills & Elevator Co., Firth, Neb. Hominy Feed	1857	8.0	11.3	4.2		Corn product
Forest Co., J. A., Dixon, Ill. Hominy Feed	2034	7.0	8.5	10.0		Corn product
Glenger Co., John, Jeffersonville, Ind. Hominy Feed	1887	7.0	9.0	5.0		Corn product

²⁵Succeeded by J. M. Lee.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Grim, Wm. H., Indianapolis, Ind. Hominy Feed	1553	7.5	8.0	12.0		Corn product
Hall Milling Co., W. C., Brazil, Ind. Hall's Hominy Feed	589	8.3	9.8	8.8		Corn product
Hartman & Sons, Louis, New Albany, Ind. "A" Hominy Feed	3021	7.0	8.0	9.0		Corn product
Henry Company, The, Terre Haute, Ind. Henry's Hominy Feed	2000	8.0	10.0	4.0		Corn product
Herendeen, C., Chicago, Ill. Herendeen's Oriental Feed	2112	7.1	9.9	4.6		Corn product
Hermann & Company, J. G., Indianapolis, Ind. Hermann's Choice Hominy Feed	2000	7.5	9.0	9.0		Corn product
Hodapp Hominy Co., Seymour, Ind. Hodapp Hominy Feed	2642	7.5	10.0	9.0		Corn product
Hunter Bros. Milling Company, St. Louis, Mo. "Hominy Feed"	362	7.0	9.5	10.0		Corn product
Indiana Milling Co., Terre Haute, Ind. Parched Hominy Feed	2331	3.0	5.0	10.0		Parched hominy hearts
Kell, C. H., Indianapolis, Ind. Hominy Feed	1794	7.5	10.0	8.0		Corn product
Kern & Sons, John B. A., Milwaukee, Wis. Eagle Hominy Feed	2065	8.5	10.0	5.0		Corn product
Kidder & Co., F. L., Paris, Ill. Peerless Hominy Feed	2449	7.5	8.5	4.5		Corn product
Kuhn & Co., Paul, Terre Haute, Ind. Hominy Feed	2735	7.7	10.0	5.0		Corn product
LaFayette Hominy Mill Co., The, LaFayette, Ind. Hominy Feed	9	8.4	9.5	3.5		Corn product
Louisville Cereal Mill Co., Louisville, Ky. Hominy Meal	2020	7.0	9.0	9.0		Corn product
Hominy Feed	2650	8.2	9.1	6.5		Corn product
Loving, J. M., Indianapolis, Ind. Hominy Meal	1540	7.5	8.0	12.0		Corn product
McCoy, Robt. A., Greensburg, Ind. Hominy Meal	2060	7.0	9.0	10.0		Corn product
Noblesville Milling Co., Noblesville, Ind. Hominy Chop	1488	7.5	9.5	5.0		Corn product
Ohio Falls Cereal Company, New Albany, Ind. Hominy Meal Feed	2519	7.4	10.0	7.5		Corn product
Pfeffer Milling Co., Lebanon, Ill. Pfeffer Milling Co., Hominy Feed	2017	8.0	10.0	8.7		Corn product
Ralidt Milling Co., F., Louisville, Ky. Hominy Meal	1920	6.0	8.0	7.0		Corn product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Rensselaer Mill & Feed Store, Rensselaer, Ind. Hominy Meal	1313	7.0	8.0	5.0		Corn product
Suffern, Hunt & Co., Decatur, Ill.  Hominy Feed	2464	7.1	9.3	4.5		Corn product
5—GLUTEN FEED						
Clinton Sugar Refining Co., Clinton, Iowa. Clinton Gluten Feed.....	2722	3.0	20.0	7.5		Corn product
Continental Cereal Company, Peoria Ill. Continental Gluten Feed.....	2204	13.5	31.0	3.5		Corn, oats and malt
Corn Products Refining Co., Chicago, Ill. Buffalo Gluten Feed.....	2510	2.5	24.0	8.5		Corn product
Douglas & Co., Cedar Rapids, Iowa. Cedar Rapids Gluten Feed.....	2300	4.0	22.0	8.0		Corn product
Forest Company, J. A., Dixon, Ill. Gluten Feed	2084	3.0	23.0	7.5		Corn product
Hubinger Bros. Co., J. C., Keokuk, Iowa. K. K. K. Gluten Feed.....	2902	2.0	23.0	7.5		Corn product
Knoblock & Ginz Milling Co., South Bend, Ind. Gluten Feed	2481	2.5	25.0	8.5		Corn product artificially colored
Piel Bros. Starch Co., Indianapolis, Ind. Gluten Feed	2098	2.8	22.5	8.0		Corn product
Hoosier Gluten Feed.....	2856	2.0	14.0	8.0		Corn product
Union Starch & Refining Co., Edinburg, Ind. Union Gluten Feed.....	559	3.0	24.0	6.3		Corn product
6—CORN GERM MEAL						
American Hominy Company, Indianapolis, Ind. Homcolline Feed	2401	6.5	16.0	10.0		Corn product
Union Starch & Refining Co., Edinburg, Ind. Union Corn Germ Meal.....	2237	8.0	18.0	9.0		Corn product
7—CORN OIL MEAL						
Corn Products Refining Co., Chicago, Ill. Pure Corn Oil Meal.....	2308	8.0	18.0	8.0		Corn product
8—LINSEED MEALS						
American Linseed Co., New York, N. Y. "Wright & Hills" Linseed Meal.....	819	6.0	32.0	11.0		Flaxseed product
"American Linseed Co." Linseed Meal.....	820	6.0	32.0	11.0		Flaxseed product
"Cleveland Flax Meal".....	1981	2.0	36.0	7.0		Flaxseed product
Archer Daniels Linseed Co., Minneapolis, Minn. Old Process Ground Linseed Cake.....	1834	6.0	32.0	10.0		Flaxseed product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Brown Oil Co., Robert B., St. Louis, Mo. Pure Old Process Linseed Meal.....	2108	9.0	34.0	8.0		Flaxseed product
Chicago Heights Oil Mfg. Co., Chicago Heights, Ill. Chicago Heights Oil Mfg. Co. O. P. Oil Meal.....	3008	6.0	32.0	9.0		Flaxseed product
Chicago White Lead & Oil Co., Chicago, Ill. "The King" Ground Linseed Oil Cake.....	573	6.0	32.0	12.0		Flaxseed product
Crabbs, Reynolds, Taylor Co., LaFayette, Ind. Linseed Meal.....	2380	6.0	32.0	11.0		Flaxseed product
Evans Linseed Oil Co., Indianapolis, Ind. Linseed Oil Meal.....	773	6.0	33.0	15.0		Flaxseed product
Hirst & Begley Linseed Co., Chicago, Ill. Hirst & Begley Linseed Co.'s Ground Linseed Cake.....	2418	8.0	34.0	9.0		Flaxseed product
Hunter Bros. Milling Company, St. Louis, Mo. Old Process Linseed Oil Meal.....	2020	6.5	34.0	11.0		Flaxseed product
Kell, C. H., Indianapolis, Ind. Flaxseed Meal.....	1795	6.0	32.0	9.0		Flax seed product
Minor Co., The Guy G., Toledo, Ohio. Old Process Oil Meal.....	2858	5.0	30.0	2.0		Flaxseed product
Mayflower Mills, Fort Wayne, Ind. Mayflower Mills Oil Meal.....	448	8.0	30.0	8.0		Flaxseed product
Metzger Seed & Oil Co., The, Toledo, Ohio. Oil Meal.....	1387	5.0	30.0	8.0		Flaxseed product
Midland Linseed Company, Minneapolis, Minn. Old Process Ground Linseed Cake.....	608	6.0	32.0	10.0		Flaxseed product
McCaffrey & Co., Kokomo, Ind. Ground Oil Cake.....	1532	5.0	33.0	10.0		Flaxseed product
O'Brien Varnish Co., The, South Bend, Ind. Screw Press Old Process Linseed Oil Meal.....	2443	6.0	30.0	13.0		Flaxseed product
Sherwin-Williams Co., The, Cleveland, O.  Linseed Meal.....	1723	6.0	33.0	8.0		Flaxseed product
Valparaiso Grain & Elevator Co., Valparaiso, Ind. Ground Oil Cake.....	1404	5.0	30.0	12.0		Flaxseed product
9—LOW GRADE GROUND FLAXSEED CAKE						
Laxo-Cake Meal Co., The, Chicago, Ill. Laxo-Cake-Meal.....	2148	8.0	25.0	9.0		Ground Flaxseed Cake

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
10—FLAXSEED SCREENINGS					
Forrest Company, J. A., Dixon, Ill. Flaxine	1889	15.8	15.7	17.7	Flax cleanings
Lull & Co., Chas. R., Milwaukee, Wis. Ground Flax Flakes.....	2077	10.0	14.0	12.5	Flaxseed screenings
Rankin & Co., M. G., Milwaukee, Wis. Durham Flax Meal.....	1859	12.0	15.0	12.0	Flax screenings
11—COTTON SEED MEAL					
American Cotton Oil Co., The, New York, N. Y. Choice Cotton Seed Meal.....	1335	9.0	41.0	10.5	Cotton seed product
Bartlett Company, J. E., Jackson, Mich. "Michigan Farmer Brand" Choice Cotton Seed Meal	2231	8.0	41.0	9.0	Cotton seed product
"Farmer Brand" Fancy Choice Cotton Seed Meal	2780	9.0	41.0	7.0	Cotton seed product
Brode & Co., F. W., Memphis, Tenn. Owl Brand Cotton Seed Meal.....	1769	7.0	41.0	9.0	Cotton seed product
Brown Oil Co., Robert B., St. Louis, Mo. Choice Cotton Seed Meal.....	2161	9.0	41.0	10.5	Cotton seed product
Chapin & Co., St. Louis, Mo. Green Diamond Cotton Seed Meal.....	1665	9.0	41.0	10.0	Cotton seed product
Crabbs, Reynolds, Taylor Co., LaFayette, Ind. Crescent Brand Cotton Seed Meal.....	2765	7.5	41.0	13.0	Cotton seed product
Curry, W. C., Louisville, Ky. "Curry's Choice" Cotton Seed Meal.....	2676	8.5	41.0	8.0	Cotton seed product
De Soto Oil Co., Memphis, Tenn. "De Soto"	1520	8.0	38.5	10.0	Cotton seed product
East St. Louis Cotton Oil Co., National Stock Yards, Ill. "Illinois" Brand Cotton Seed Meal.....	1697	7.0	35.0	5.0	Cotton seed product
Exchange Cotton & Linseed Meal Co., The, Kansas City, Mo. Rose Brand Cotton Seed Meal.....	2751	7.0	41.0	10.0	Cotton seed product
Forrest City Cotton Oil Mill, Forrest City, Ark. Prime Cotton Seed Meal or Cake.....	2398	7.0	41.0	9.0	Cotton seed product
Hermann & Company, J. G., Indianapolis, Ind. Hermann's Choice Cotton Seed Meal....	2088	7.0	41.0	11.0	Cotton seed product
Humphreys-Godwin & Co., Memphis, Tenn. Dixie Brand Cotton Seed Meal.....	1487	8.0	41.0	7.0	Cotton seed product
Dixie Brand Meal.....	2685	7.0	38.5	13.0	Pressed cotton seed
Hunter Bros. Milling Co., The, St. Louis, Mo. Hunter Bros. Milling Co.'s Prime Cotton Seed Meal	2063	7.5	41.0	14.0	Cotton seed product
Imperial Cotto Milling Co., Peoria, Ill. Imperial Cotto Brand Cotton Seed Meal	2851	9.0	41.0	9.0	Cotton seed product

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Louisville Cottonseed Products Co., The, Louisville, Ky. "Louisville Brand" Cotton Seed Meal.....	2981	6.0	41.0	10.0	Decorticated cotton seed
Peacock Cottonseed Meal Co., Memphis, Tenn. Peacock Cottonseed Meal.....	3191	8.0	38.5	7.0	Cotton seed product
Roberts Cotton Oil Co., Memphis, Tenn. Cotton Seed Meal.....	2554	7.0	40.0	8.0	Cotton seed product
Wells Company, J. Lindsay, Memphis, Tenn. Star Brand Cotton Seed Meal.....	2895	8.0	38.5	7.0	Decorticated cotton seed
Wheeler, A. L., Mooresville, Ind. Banner Cotton Seed Meal.....	1550	10.0	37.5	10.0	Cotton seed product
12—COLD PRESSED COTTON SEED CAKE					
Smith & Co., George B., Chicago, Ill. Cold Pressed Cotton Seed.....	2515	6.0	25.2	25.0	Pressed whole cotton seed, including hulls
13—COTTON SEED MEAL AND COTTON SEED HULLS (Cotton Seed Feed Meal)					
Bartlett Company, The, Jackson, Mich. "Cuddomeal"	2397	3.0	15.0	38.0	Cotton seed meal and cotton seed hulls
East St. Louis Cotton Oil Co., National Stock Yards, Ill. Coweta	2673	4.0	16.0	38.0	Cotton seed meal and cotton seed hulls
Glenger & Co., John, Jeffersonville, Ind. Glenger's Cotton Seed Feed Meal.....	2839	4.0	22.0	28.0	Cotton seed meal and cotton seed hulls
Humphreys, Godwin & Co., Memphis, Tenn. "No. 77" Feed Meal.....	2724	4.5	22.0	28.0	Cotton seed meal and cotton seed hull bran
Tennessee Fiber Co., Memphis, Tenn. Creamo Brand Cotton Seed Feed Meal....	1378	5.0	22.0	25.0	Choice cotton seed meal and prime cotton seed hulls
Wells Company, J. Lindsay, Memphis, Tenn. Sunny South Brand Cotton Seed Feed Meal	2894	5.0	20.0	28.0	Cotton seed meal and cotton seed hulls
14—COTTON SEED HULLS					
Hunter Bros. Milling Co., The, St. Louis, Mo. Cotton Seed Hulls.....	2744	1.0	3.0	43.0	Cotton seed hulls
15—MALT SPROUTS					
Smith, Roper & Co., Hobart, Ind. Malt Sprouts	2041	1.0	18.0	15.0	Barley product
16—DISTILLERS DRIED GRAINS					
Berghoff Brewing Co., Fort Wayne, Ind. Berghoff's Dried Brewers' Grains.....	1516	6.0	25.0	15.8	Malt and rice
Chapin & Company, Inc., Milwaukee, Wis. Ajax Flakes	2337	12.0	30.0	16.0	Dried distillers' grains

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Dewey Bros. Co., The, Blanchester, Ohio. Corn Three (3) D Grains.....	2881	9.0	23.0	13.0	Distillers' dried grains	
17—DRIED BEET PULP						
Larrowe Milling Co., The, Detroit, Mich. Dried Beet Pulp.....	2709	0.5	8.0	20.0	Sugar beet product	
18—ALFALFA PRODUCTS						
Alfalfa Products Co., The, Fremont, Neb. Alfalfa Meal	2951	0.8	10.0	20.0	Alfalfa product	
Dickinson Company, The Albert, Chicago, Ill. Alfalfa Meal	2816	1.0	12.0	30.0	Alfalfa product	
Edwards & Loomis Co., Chicago, Ill. Red Comb Alfalfa Meal.....	3001	1.0	13.5	25.0	Alfalfa product	
Harper & Sons, James, Wichita, Kansas. Pure Alfalfa Meal.....	2259	2.0	15.0	27.3	Alfalfa product	
Henry Company, The, Terre Haute, Ind. Henry's Alfalfa Meal.....	2699	2.0	14.0	28.0	Alfalfa product	
Hermann & Co., J. G., Indianapolis, Ind. Hermann's Choice Alfalfa Meal.....	2421	2.0	13.0	33.0	Alfalfa product	
Kornalfalfa Feed Milling Co., The, Kansas City, Mo. Pioneer Alfalfa Meal.....	2732	2.0	14.0	25.0	Alfalfa product	
LaFayette Hominy Mill Co., LaFayette, Ind. Alfalfa Meal	2623	1.5	14.0	25.0	Alfalfa product	
Peters Mill Co., M. C., Omaha, Neb. Lucern Alfalfa Meal.....	2972	2.0	12.0	33.0	Alfalfa product	
Potwin Pure Alfalfa Meal Co., Potwin, Kansas. Alfalfa Meal	2111	1.5	14.0	15.0	Alfalfa product	
Ralston Purina Co., St. Louis, Mo. Purina Alfalfa Meal.....	565	2.0	16.0	29.5	Alfalfa product	
Weiss Alfalfa Stock Food Co., Otto, Wichita, Kansas. Pure Dustless Alfalfa	2008	1.5	14.0	29.0	Alfalfa product	
Whitewater Alfalfa Milling Company, The, Whitewater, Kansas. Alfalfa Meal	2445	1.5	14.0	25.0	Alfalfa product	
19—ANIMAL MEALS						
Armour Fertilizer Works, The, Chicago, Ill. Meat Meal	896	10.0	50.0	1.5	Meat product	
Feeding Tankage	899	10.0	40.0	1.5	Meat product	
Blood Meal	900	0.0	80.0	1.5	Dried prepared blood	
60% Meat Meal.....	902	10.0	60.0	1.5	Meat product	
Clendenin & Company, Richmond, Ind. Feeding Tankage	2132	13.0	45.0	0.0	Meat product	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Darling & Company, Chicago, Ill.						
Beef Meal	753	10.0	45.0	0.0	Meat product	
Concentrated Meal	1208	10.0	45.0	0.0	Meat product	
Blood Meal	1270	1.0	80.0	0.0	Blood	
Darling's 40% Digester Tankage.....	2504	5.0	40.0	0.0	Meat product	
Darling's 60% Digester Tankage.....	2620	5.0	60.0	0.0	Meat product	
Dreese, James I., Rock Island, Ill.						
Tankage for Hog Feeding.....	2439	10.0	40.0	5.0	Meat product	
Dryfus Packing & Provision Co., LaFayette, Ind.						
Star Feeding Tankage.....	2907	3.2	20.0	0.0	Meat product containing phosphates	6%
Huntington Fertilizer Co., Huntington, Ind.						
Farmer's Commercial Feeding Stuff.....	2074	10.0	36.0	0.0	Meat product	
Major Bros. Packing Co., Mishawaka, Ind.						
Blood Meal	1971	1.0	55.0	5.0	Dried blood	
Rauh & Sons, E., Indianapolis, Ind.						
Rauh's Stock Food.....	534	12.0	80.0	0.0	Meat meal	
Rauh's Digester Tankage for Hogs.....	2097	0.0	60.0	0.0	Meat product	
Routh & Co., W. C., Logansport, Ind.						
Routh's Feeding Tankage.....	2008	5.0	50.0	0.0	Blood and meat product	
Southern Seed Company, Louisville, Ky.						
Beef Meal	2466	7.0	37.0	0.0	Meat and bone	
Swift & Company, Chicago, Ill.						
Swift's Soluble Blood Flour.....	58	0.0	87.0	0.0	Blood	
Swift's Digester Tankage.....	60	8.0	60.0	0.0	Meat residue containing phosphates	6%
Swift's Meat Meal.....	61	10.0	45.0	0.0	Meat residue containing phosphates	6%
Swift's Blood Meal.....	63	0.0	87.0	0.0	Blood	
Swifts Beef Meal.....	1807	6.0	40.0	0.0	Meat residue	
20—PROPRIETARY AND MOLASSES FEED						
A—Containing Grains, By-Products, Alfalfa, Crushed Ear Corn (Corn and Cob Meal)						
American Alfalfa Food Co., Wichita, Kansas.						
Acme Horse Feed No. One.....	2509	3.1	14.5	12.3	Wheat bran, shorts, alfalfa meal, linseed meal, corn, oats and salt	
American Milling Company, Chicago, Ill.						
Sucrene Alfalfa Horse and Mule Feed....	2679	3.5	10.0	15.0	Wheat, corn, oats, barley, buckwheat, alfalfa, linseed meal and ½ of 1% salt	
Badenock Co., J. J., Chicago, Ill.						
Badenock's Kurvnek Brand Horse Feed...	2711	4.0	10.5	5.0	Corn, oats and barley	
Barwell, J. W., Waukegan, Ill.						
Blatchford's Calf Meal.....	1047	5.0	25.0	4.4	Locust bean meal, flour, flax-seeds, seeds and lentils	
Biles Co., J. W., The, Cincinnati, Ohio.						
Ubiko Horse and Stock Feed.....	2411	6.0	16.0	9.0	Wheat bran, middlings, hominy feed, dried brewers' grains and old process linseed meal	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Biles Co., J. W., The Cincinnati, Ohio. Union Grains (Ublko) Biles Ready Dairy Ration	2463	7.0	24.0	9.0	Dried distillers grains, cotton seed meal, old process linseed meal, wheat middlings, wheat bran, hominy meal, barley malt sprouts and salt
Chaplin & Co., Inc., Milwaukee, Wis. Unicorn Dairy Ration.....	2123	6.0	26.0	9.0	Wheat and corn gluten feed, hominy meal, barley feed and sprouts, distillers grains and cotton seed meal
Commonwealth Feed Mills Co., St. Louis, Mo. Action Alfalfa Horse Feed.....	2778	4.2	11.5	19.5	Alfalfa, corn, oats, peanut meal and salt
Corn Products Refining Company, Chicago, Ill. Diamond Hog Meal.....	2249	8.0	18.0	13.0	Corn product and sterilized animal bone
Dickinson Company, The Albert, Chicago, Ill. Red Cross Stock Feed.....	2003	3.5	10.0	10.0	Wheat meal, corn, oats, barley and salt
Eberts & Bro., North Vernon, Ind. Quality Feed	2019	5.0	16.0	12.0	Wheat bran, wheat middlings, hominy meal, alfalfa meal, linseed meal, cotton seed meal and salt
Eberts & Bro., Charlestown, Ind. Co-Fal-Bra	2009	3.5	11.0	12.0	Wheat bran, corn and cob meal (ground ear corn), alfalfa meal, and linseed meal
Edwards & Loomis Co., Chicago, Ill. Edwards Excelsior Crushed Grain Horse Feed	2007	3.0	10.0	8.0	Corn, rolled oats and rolled barley
Enos, M. T., New Albany, Ind. Enos' Dairy Feed.....	2498	3.6	9.2	13.0	Wheat bran, alfalfa meal, corn and cob meal (crushed ear corn) and oats
Great Western Cereal Company, Chicago, Ill. Maizefalfa Feed	1897	4.0	12.0	11.0	Corn, hominy feed, oat middlings and alfalfa meal
Grainalfalfa Feed	1995	4.0	12.0	11.0	Corn, hominy feed, oat middlings and alfalfa meal
Gregson's Calf Meal	2405	5.0	25.0	5.0	Oat meal, barley, linseed meal and cotton seed meal
Boss Chop Feed	2530	3.5	8.5	11.0	Corn, oats and hominy feed
Harper & Sons, James, Wichita, Kansas. Harper's Mixed Alfalfa Stock Feed.....	2238	3.5	12.0	12.0	Corn chop, alfalfa meal, wheat bran and cotton seed meal
Janes, Frank E., Indianapolis, Ind. Janes' Alfalfa Horse Feed.....	2065	4.0	12.7	4.0	Alfalfa, corn and oats
LaFayette Hominy Mill Co., LaFayette, Ind. "Alpha Feed"	2670	3.0	12.5	20.0	Wheat bran, middlings, corn, oats, hominy feed and alfalfa meal
North West Mills Co., Winona, Minn. Sugarota Calf Meal.....	2875	5.0	25.0	7.0	Wheat, malt, linseed meal and cotton seed meal

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Ohio Valley Seed Co., Evansville, Ind. Crown Alfalfa Feed	2082	4.2	15.1	5.9	Wheat bran, corn, oats, barley and alfalfa meal
Ralston Purina Company, St. Louis, Mo. Protena Feed	1912	4.0	12.3	11.9	Corn, oats, hominy feed, dried brewers' grains and ground alfalfa
Purina Feed	2022	4.0	12.5	8.9	Corn, oats, hominy feed, dried brewers' grains and alfalfa meal
Rhoads & Co., W. S., Chicago, Ill. Malted Sugar Meal.....	2186	9.8	25.5	7.5	Flaxseed meal, cotton seed meal, cocoanut meal, locust bean meal, pea meal, bean meal
Honeysuckle Calf Meal.....	2187	6.5	24.8	5.4	Wheat flour, flaxseed meal, cocoanut meal, locust bean meal, English pea meal, field bean meal, dry milk powder, dried blood
Stout, Harry T., Crawfordsville, Ind. Star Chop Feed	2158	4.0	11.0	14.0	Wheat bran, shorts, corn, oats and alfalfa
Weiss Alfalfa Stock Food Co., The Otto, Wichita, Kans. The Otto Weiss Alfalfa Stock Food.....	2063	3.5	11.0	14.0	Alfalfa, corn chop, wheat bran, shorts, linseed oil meal and salt
Wichita Alfalfa Stock Food Co., The, Wichita, Kansas. Wichita Alfalfa Stock Food.....	2079	3.0	10.0	17.0	Wheat bran, corn, alfalfa, oil meal and salt
B—Containing Grains, By-Products, Alfalfa, Molasses					
Alfalfa Meal Company, Omaha, Neb. Peerless Alfalmo Horse Feed.....	2528	2.5	11.0	15.0	Corn, oats, alfalfa meal and molasses
Hayes, W. E., Kokomo, Ind. Hayes Special Chop.....	2806	3.0	9.5	8.0	Corn, oats, alfalfa meal and molasses
Hord Alfalfa Meal Co., T. B., Central City, Neb. "4 in 1".....	2957	2.0	10.0	10.0	Corn, oats, alfalfa meal and molasses
International Sugar Feed Co., Minneapolis, Minn. Sugared Feed for Horses.....	2078	5.0	12.5	12.5	Oats, barley, linseed meal and molasses
Sugared Feed for Milch Cows.....	2079	3.5	16.5	12.0	Wheat, oats, barley, buckwheat, cotton seed meal and molasses
Sugared Feed Sucrose.....	2080	5.0	25.0	15.0	Wheat, oats, barley, buckwheat, linseed meal, cotton seed meal and molasses
Janes, Frank E., Indianapolis, Ind. Al-Mo-Co	2232	2.4	10.0	12.0	Alfalfa meal, corn, oats and molasses
Milwaukee Grains & Feed Company, Milwaukee, Wis. XXX Horse Feed.....	2557	2.5	14.0	10.0	Dried brewers' grains, malt sprouts, alfalfa meal and molasses

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Peters Mill Co., M. C., Omaha, Neb. Acorn Sugar Feed	2273	2.0	10.0	15.0	Corn, barley, alfalfa meal and syrup	
Peters' Arab Horse Feed.....	2761	2.0	9.0	15.0	Corn, oats, alfalfa meal and syrup	
C—Containing Alfalfa Meal and Molasses						
Alfalfa Meal Company, Omaha, Neb. Alfalmo	2629	0.1	0.1	13.0	Alfalfa hay and molasses	
Alfalfa Products Co., The, Fremont, Neb. Alfalfa-Lass	2947	0.8	10.0	20.0	Alfalfa meal and molasses	
Hord Alfalfa Meal Co., T. B., Central City, Neb. "A. M."	2956	0.8	10.0	20.0	Alfalfa meal and molasses	
Janes, Frank E., Indianapolis, Ind. Al-Mo	2032	1.0	11.0	15.0	Alfalfa meal and molasses	
Peters Mill Co., M. C., Omaha, Neb. June Pasture Dairy Feed.....	2760	0.5	10.0	25.0	Alfalfa meal and syrup	
Alfal-Fat Sugar Meal.....	2762	0.5	10.0	25.0	Alfalfa meal and syrup	
Quaker Oats Company, The, Chicago, Ill. Alfalfa Molasses Feed.....	2982	1.0	13.0	13.0	Alfalfa meal and molasses	
D—Containing Grains, By-Products and One or More of the Following Fillers: Grain Screenings, Flax Bran, Oat Hulls, Oat Clippings, Cotton Seed Hulls, Corn Screenings, Cob Meal, Peat						
American Milling Company, Chicago, Ill. Sucrene Dairy Feed	2572	3.5	16.5	20.0	Wheat, oats, barley, cotton seed meal, grain screenings, salt and molasses	
Sucrene Horse and Mule Feed.....	2573	3.5	10.0	12.0	Wheat, corn, oats, barley, grain screenings, salt and molasses	
Biehl, I. L., Brazil, Ind. Biehl's Mixed Feed.....	1153	4.2	10.5	9.0	Wheat, corn, oats, barley, wheat bran, hominy feed, cotton seed meal, grain screenings, salt and molasses	
Champion Feed Milling Company, Lyons, Iowa. Champion Molasses Feed Compound.....	2448	2.0	13.0	6.0	Wheat bran, wheat screenings, corn, flaxseed, peat and molasses	
Corno Mills Company, The, East St. Louis, Ill. Corno Horse and Mule Feed.....	2770	3.5	10.0	12.0	Corn, hominy feed, alfalfa, cotton seed meal, oat middlings and oat hulls	
Edwards & Loomis Co., Chicago, Ill. "A" Pioneer Horse and Cattle Feed.....	2721	2.5	7.5	3.0	Corn grits, cracked corn, siftings, light oats and oat hulls	
Ellis, Edwin, Terre Haute, Ind. Eureka Dairy Feed.....	2453	2.0	10.0	15.0	Corn screenings, malt and chaff	
Eureka Mix Feed.....	2899	3.0	10.0	10.0	Wheat, corn, corn and cob meal, oats, barley, malt sprouts, cotton seed meal, buckwheat feed, grain screenings and molasses	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Emmison & Co., J. & S., (Baltic Mills), Vincennes, Ind. Sampson's Stock Feed.....	2893	3.5	9.2	14.0	Corn, oats, cotton seed meal, oat hulls and cob meal	
Jumbo Feed	2896	4.0	7.0	15.0	Wheat bran, hominy feed and cob meal	
Goeke & Co., F. W., St. Louis, Mo. Holstein Sugar Feed.....	2474	3.0	15.0	15.0	Wheat, corn, oats, barley, cotton seed meal, malt sprouts, buckwheat bran, buckwheat middlings, grain screenings and molasses	
Great Western Cereal Co., The, Chicago, Ill. Daisy Horse Feed.....	2399	3.0	12.0	11.0	Cotton seed meal, barley, alfalfa meal, oats, oat middlings, oat hulls and molasses	
Daisy Dairy Feed.....	2379	3.0	15.0	12.0	Oats, cotton seed meal, alfalfa meal, oat middlings, oat shorts, oat hulls, salt and molasses	
Excelsior Feed	2880	3.5	8.0	11.0	Corn, hominy feed, oat middlings, oat shorts and oat hulls	
Hayes, W. E., Kokomo, Ind. W. E. Hayes Chop Feed.....	1531	3.7	10.5	11.0	Corn, oats, wheat, barley, wheat bran, cotton seed meal, grain screenings, salt and molasses	
Hermann & Co., J. G., Indianapolis, Ind. Butter Fat Dairy Meal.....	2885	3.5	16.5	12.0	Wheat, oats, barley, cotton seed meal, grain screenings, salt and molasses	
H. O. Company, The, Buffalo, N. Y. H. O. Horse Feed.....	1932	4.5	12.0	18.0	Corn, oats, oat bran, oat hulls, wheat middlings, red dog flour, gluten feed, hominy feed and salt	
Indiana Milling Co., Terre Haute, Ind. Jersey Mixed Feed.....	713	2.0	10.0	16.0	Wheat bran, middlings and cob meal	
Jersey Middlings	2073	2.0	10.0	14.0	Wheat middlings, low grade flour and cob meal	
Sterling Mixed Feed.....	2379	3.0	11.5	15.0	Wheat bran, middlings, low grade flour and cob meal	
Flo-Middo Mixed Feed.....	2395	2.5	11.0	13.0	Wheat middlings, low grade flour and cob meal	
Swlnero	2683	1.6	12.3	13.2	Ground parched wheat and cob meal	
Whiskerene	2127	2.0	11.4	14.0	Corn silks, husks and corn screenings	
International Sugar Feed Company, Minneapolis, Minn. International Cattle Feed.....	2790	5.0	25.0	10.0	Cotton seed meal, linseed oil meal, grain screenings, oat clippings, salt and molasses	
International Hog Feed and Charcoal....	2791	3.5	18.0	12.0	Old process oil meal, tankage, grain screenings, oat clippings, salt, charcoal and molasses	
International Dairy Feed.....	2792	3.5	16.5	12.0	Cotton seed meal, grain screenings, oat clippings, salt and molasses	
International Horse Feed.....	2793	3.5	12.5	10.0	Oats, barley, oil meal, grain screenings, salt and molasses	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Imperial Cotto Milling Co., Peoria, Ill. Imperial Cotto Dairy Feed.....	2963	5.0	15.0	28.0	Cotton seed meal, gluten feed, cotton seed hulls	
Krause Milling Co., Chas. A., Milwaukee, Wis. Badger Dairy Feed.....	2390	3.5	16.0	12.0	Corn, oats, cotton seed meal, distillers' grains, brewers' grains, malt sprouts, grain screenings and molasses	
Lawson & Co., John T., Spencer, Ind. Molasses Grains	1287	2.5	16.0	18.0	Malt sprouts, dried grains, grain products and molasses	
Martin Produce Co., West LaFayette, Ind. Martin Cow and Horse Feed	1933	3.5	9.5	12.0	Wheat bran, wheat shorts, corn bran, corn and cob meal, corn meal, oats, rice bran, salt and 10% rice hulls	
North West Mills Co., Winona, Minn. Sugarota Dairy Feed.....	2871	3.0	16.0	14.0	Cotton seed meal, malt sprouts, flax shives, flax pods and flax seeds, wheat screenings, salt and molasses	
Sugarota Cattle Feed	2872	3.0	16.0	14.0	Cotton seed meal, malt sprouts, flax shives, flax pods and flax seeds, wheat screenings, salt and molasses	
Sugarota Swine Feed.....	2873	3.0	16.0	14.0	Cotton seed meal, malt sprouts, flax shives, flax pods and flax seeds, wheat screenings, salt and molasses	
Sugarota Horse Feed.....	2874	2.0	12.0	14.0	Mill oats from wheat screenings, cotton seed meal, malt sprouts, flax shives, flax pods and flax seeds, wheat screenings, salt and molasses	
Quaker Oats Company, The, Chicago, Ill. Schumacher Stock Feed.....	687	4.0	10.0	10.0	Corn, barley, wheat flour, oat middlings, oat shorts and oat hulls	
Victor Feed	688	3.7	5.0	12.0	Corn, oat middlings, oat shorts and oat hulls	
Molac Horse Feed.....	2593	3.2	10.0	10.5	Alfalfa, corn, oats, oat middlings, oat hulls, barley, salt and molasses	
Maz-All Corn Feed.....	2637	1.4	9.5	2.0	Corn siftings from hominy grits	
Quaker Dairy Molasses Feed.....	2787	3.5	16.0	12.0	Cotton seed meal, oat shorts, oat middlings, oat hulls, flax pods, flax stalks, grain screenings and molasses	
Schumacher Special Horse Feed.....	2067	3.2	9.2	8.0	Corn, oats, barley, oat middlings, oat shorts, oat hulls and salt	
Vim Horse Feed.....	2061	3.2	10.0	10.5	Alfalfa, corn, oats, oat shorts, oat middlings, oat hulls, barley, salt and molasses	
Raasch, Paul E., Crown Point, Ind. Molasses Feed	1357	1.0	10.0	30.0	Dried grains, malt sprouts, products of grains and molasses	
Steinmesch Feed & Poultry Supply Co., St. Louis, Mo. Steinmesch's Alfalfa Cow Feed.....	770	3.0	12.9	7.0	Grains, seeds, alfalfa hay and molasses	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Sugarine Company, The, Chicago, Ill. Sugarine Dairy Feed.....	2071	3.5	16.5	12.0	Cotton seed meal, oats, barley, wheat, grain screenings and molasses
Sugarine Horse Feed.....	2072	3.0	10.0	13.5	Corn, oats, barley, wheat, grain screenings and molasses
Sugarine Stock Feed.....	2073	2.0	10.0	12.0	Wheat, oats, barley, grain screenings, malt sprouts, salt and molasses
United Cereal Company, Chicago, Ill. Famous Feed	2068	4.0	8.0	5.0	Corn, hominy feed, oat middlings, oat shorts and oat hulls
C. & O. Feed.....	2069	4.4	8.0	5.0	Corn, hominy feed, oat middlings, oat shorts and oat hulls
Western Grain Products Company, Hammond, Ind. Hammond Dairy Feed.....	555	3.0	17.0	10.0	Distillers' grains, cotton seed meal, malt sprouts, grain screenings and molasses
Hammond Horse Feed.....	2480	2.8	12.0	9.0	Corn, barley, oats, grain screenings, linseed meal and molasses
Wilber & Co., C. H., Brazil, Ind. Wilber's Mixed Feed.....	2536	4.0	10.0	10.0	Wheat, barley, oats, wheat bran, hominy feed, cotton seed meal, screenings, salt and molasses
21—POULTRY AND SCRATCH FEEDS					
Alsop Feed and Cereal Company, Indianapolis, Ind. Lay-O Scratch Feed.....	2585	2.5	10.0	7.0	Corn, oats, wheat screenings, shell and charcoal
American Stock Food Company, Kansas City, Mo. Laymore B.	2539	3.0	10.0	4.4	Wheat, oats, rye, barley, corn, kaffir corn, millet, field seeds, meat meal, bone meal, blood meal and grit
Purity	2540	3.0	10.0	4.4	Wheat, oats, rye, corn, barley, kaffir corn, rice, flax seed, cotton seed meal, meat meal, millet seed, sunflower seed, blood meal and bone meal
Junior Chick B.....	2541	3.0	10.0	4.4	Wheat, oats, rye, barley, corn, kaffir corn, millet seed, field seed, meat meal, bone meal, blood meal and grit
Beef Scraps	2542	10.0	50.0	10.0	Meat product
Blue Jay	2543	5.0	19.0	11.5	Wheat, corn, oats, barley, rye, rice, kaffir corn, millet seed, flax seed, sunflower seed, sugar cane seed, alfalfa, wheat bran, middlings, flax seed meal, cotton seed meal, blood meal, meat meal, bone meal, beet and cane molasses
Laymore A.	2562	3.0	10.0	10.0	Wheat, oats, rye, barley, corn, kaffir corn, millet, field seeds, meat meal and bone meal
Wheat Meal Mash.....	2583	3.0	10.0	10.0	Wheat, oats, rye, corn, barley, kaffir corn, rice, millet seeds, sunflower seeds, sugar cane seed, alfalfa seed, grass seed, meat meal, blood meal, bone meal and grit

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
American Stock Food Company, Kansas City, Mo Egg-a-Day	2887	10.1	15.0	11.0	Meals of corn, oats, rye, barley, wheat, kaffir corn, flax, millet, alfalfa, cotton seed, meat, blood, bone and wheat middlings	
Baby Chick	2888	5.0	10.0	6.0	Wheat, rye, oats, barley, rice, corn, kaffir corn, millet seed, flax seed, meat meal, blood meal and bone meal	
Ox Blood, Meat and Bone.....	2917	12.0	50.0	10.0	Blood meal, meat meal and bone meal	
Armour Fertilizer Works, The, Chicago, Ill. Meat and Bone.....	897	8.0	42.0	1.5	Meat and bone product	
Beef Scraps	898	12.0	55.0	1.5	Meat product	
Granulated Poultry Bone.....	901	0.5	25.0	1.5	Bone product	
Feeding Bone Flour.....	1771	1.0	23.0	1.5	Powdered bone	
Badenoch Co., J. J., Chicago, Ill. Badenoch's Sunflower Brand Poultry Food	2712	2.5	10.0	5.0	Wheat, corn, kaffir corn, barley, sunflower seed, charcoal, grit and shells	
Bash & Co., S., Fort Wayne, Ind. Bash's Chicken Feed.....	904	3.9	9.5	4.5	Wheat, corn, oats, barley, rye, kaffir corn, millet, buckwheat, sunflower seed, grit and oyster shells	
Bash's Chicken Feed.....	2084	3.0	9.5	9.5	Wheat, corn, oats, barley, rye, kaffir corn, millet, buckwheat, sunflower, rape and oyster shell	
Beckman Supply Co., The, Hammond, Ind. The Ideal Poultry Food.....	1345	2.0	5.0	10.0	Corn, kaffir corn, millet, wheat, flaxseed, buckwheat, barley, sunflower, charcoal, oyster shells and grit	
Bleker Bros., Hammond, Ind. Chicken Feed	1341	2.0	5.0	10.0	Corn, kaffir corn, wheat, barley, buckwheat, millet, oyster shells and grit	
Byrnes & Co., W. J., Chicago, Ill. Daisy Brand Chick Food.....	1173	3.0	10.5	4.0	Corn, wheat, barley, kaffir corn, sunflower seed, charcoal, grit, linseed, oyster shells and seeds	
Royal Brand	1173	3.0	10.5	4.0	Corn, wheat, barley, kaffir corn, sunflower seed, charcoal, grit, linseed, oyster shells and seeds	
Browning Milling Co., W. A., Evansville, Ind. Browning's Mixed Chicken Feed.....	2164	2.0	8.0	10.0	Wheat, corn, barley, kaffir corn, oats, wild seeds and grit	
Chamberlain Co., F. B., St. Louis, Mo. Imperial Chicken Feed.....	2472	3.5	10.0	6.0	Wheat, corn, kaffir corn, screenings, field seeds and grit	
Acorn Chicken Feed.....	2933	3.5	10.0	6.0	Wheat, corn, kaffir corn, sunflower seed, screenings, weed and field seeds	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Chamberlain Feed Co., W. F., St. Louis, Mo.						
Chamberlain's Premium Feed.....	2239	3.5	10.0	6.0		Wheat, kaffir corn, millet, screenings, seeds and grit
Chamberlain's Perfect Feed.....	2240	3.5	10.0	6.0		Wheat, kaffir corn, millet, screenings, seeds and grit
Commonwealth Feed Mills Co., St. Louis, Mo.						
Missouri Hen Feed.....	2318	5.0	11.0	5.5		Wheat, corn, oats, barley, kaffir corn, millo maize, seeds and grit
Conroy, M. A., Jeffersonville, Ind.						
Conroy's Scratch Feed.....	2505	3.0	11.0	7.0		Wheat, corn, kaffir corn, oats, sunflower seed and grit
Corno Mills Company, The, East St. Louis, Ill.						
Corno Hen Feed	1804	3.7	10.0	2.3		Wheat, corn, oats, kaffir corn, sunflower seed
Corno Chick Feed.....	1805	3.5	10.0	3.4		Wheat, corn, kaffir corn, millet seed
National Hen Feed.....	1876	3.7	10.0	2.3		Wheat, corn, oats, kaffir corn and sunflower seed
National Chick Feed.....	1877	3.5	10.0	3.4		Wheat, corn, kaffir corn and millet seed
Cyphers Incubator Company, Buffalo, N. Y.						
Cyphers Chick Food.....	1885	3.4	10.5	4.2		Wheat, corn, millet, kaffir corn and hulled oats
Cyphers Scratching Food.....	1836	3.0	10.6	3.5		Barley, maize, kaffir corn, wheat, sunflower, millet and buckwheat
Chick Food	2447	3.0	10.0	4.2		Wheat, maize, millet and kaffir corn
Darling & Company, Chicago, Ill.						
Beef Scraps	751	10.0	55.0	0.0		Meat product
Granulated Bone	752	2.0	20.0	0.0		Bone product
Raw Bone Meal.....	754	2.0	20.0	0.0		Bone product
Chick Feed	755	1.0	8.0	0.0		Grains, meat product, grit and shells
Forcing Food	1273	3.0	15.0	15.0		Corn meal, wheat bran, clover meal, flour, beef products, mica, grit and oyster shells
Scratching Food	1273	3.0	15.0	15.0		Corn, wheat, barley, oats, kaffir corn and sunflower seed
Laying Food	1274	4.0	18.0	15.0		Corn, oats, wheat, clover, meat products, bone and blood
Delp, Ettinger & Co., Bourbon, Ind. ²⁶						
Bourbon Scratch Feed.....	2423	3.2	10.0	6.0		Wheat, corn, kaffir corn, barley, millet, buckwheat, sunflower seed, bone, charcoal and grit
Bourbon Chick Feed.....	2545	3.2	10.0	6.0		Wheat, corn, kaffir corn, barley, buckwheat, millet, sunflower seed, bone, grit and charcoal
DeWine Company, John, The, Yellow Springs, Ohio.						
DeWine's Chick Feed.....	1968	2.3	10.4	3.7		Wheat, corn, kaffir corn, millet and flaxseed
DeWine's Developing Feed.....	1969	2.7	10.2	3.5		Wheat, corn, kaffir corn, millet, flaxseed and buckwheat
DeWine's Laying Feed.....	1970	2.6	10.3	3.8		Wheat, corn, kaffir corn, buckwheat, Canadian field peas and sunflower seed

²⁶Succeeded by E. E. Delp Grain Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Dickinson Company, Albert, The, Chicago, Ill.					
Globe Scratch Feed, With Grit.....	2803	2.5	10.0	5.0	Wheat, corn, barley, oats, kaffir corn, buckwheat, sunflower, oil cake, shells and grit
Globe Scratch Feed, No Grit.....	2804	2.5	10.0	5.0	Wheat, corn, barley, oats, kaffir corn, buckwheat, sunflower and oil cake
Pine Tree Scratch Feed, With Grit.....	2806	2.5	10.0	5.0	Wheat, corn, barley, oats, kaffir corn, shells and grit
Pine Tree Scratch Feed, No Grit.....	2806	2.5	10.0	5.0	Wheat, corn, barley, oats and kaffir corn
Crescent Chick Feed, With Grit.....	2807	2.5	10.0	5.0	Wheat, corn, kaffir corn, hulled oats, millet and grit
Crescent Chick Feed, No Grit.....	2808	2.5	10.0	5.0	Wheat, corn, kaffir corn, hulled oats and millet
Sun Chick Starter, With Grit.....	2809	2.5	10.0	5.0	Wheat, corn, kaffir corn, steel cut oats, millet and grit
Sun Chick Starter, No Grit.....	2810	2.5	10.0	5.0	Wheat, corn, kaffir corn, steel cut oats and millet
Queen Poultry Mash.....	2811	2.5	11.0	10.0	Wheat bran, middlings, shorts, corn meal, alfalfa meal and beef scraps
King Pigeon Feed, With Grit.....	2812	2.5	10.0	5.0	Wheat, corn, kaffir corn, peas, buckwheat, millet, hemp and grit
King Pigeon Feed, No Grit.....	2813	2.5	10.0	5.0	Wheat, corn, kaffir corn, peas, buckwheat, millet and hemp
Colonial Developing Feed, With Grit....	2814	2.5	10.0	5.0	Wheat, corn, kaffir corn, hulled oats, buckwheat, millet and grit
Colonial Developing Feed, No Grit.....	2815	2.5	10.0	5.0	Wheat, corn, kaffir corn, hulled oats, buckwheat and millet
Red Cross Scratch Feed, With Grit.....	2832	2.5	10.0	5.0	Wheat, corn, barley, oats, kaffir corn, sunflower, shells and grit
Red Cross Scratch Feed, No Grit.....	2863	2.5	10.0	5.0	Wheat, corn, barley, oats, kaffir corn and sunflower
Red Cross Chick Feed, With Grit.....	2864	2.5	10.0	5.0	Wheat, corn, kaffir corn, millet and grit
Red Cross Chick Feed, No Grit.....	2865	2.5	10.0	5.0	Wheat, corn, kaffir corn and millet
Dilley & Co., C. L., Logansport, Ind.					
Superior Scratch Feed.....	903	5.0	13.0	4.0	Wheat, corn, kaffir corn, oats, buckwheat, rye and linseed meal
Edwards & Loomis Co., Chicago, Ill.					
Red Comb Meat Mash.....	1417	5.2	17.9	4.4	Corn meal, bran, middlings, oat feed, alfalfa meal, beef scraps, bone meal, shells, charcoal and oil meal
Red Comb Pigeon Feed.....	1419	3.2	9.4	3.3	Wheat, corn, kaffir corn, millet, hemp, peas, buckwheat, charcoal and grit
Cackle No Grit Poultry Feed.....	1440	2.4	8.5	3.3	Corn, barley, kaffir corn, wheat and sunflower seed
"A" Red Comb Coarse Chick Feed.....	2353	3.7	11.0	3.1	Wheat, corn, kaffir corn, hulled oats, millet, charcoal and grit
"A" Red Comb Fine Chick, No Grit.....	2354	3.4	11.0	3.0	Wheat, corn, kaffir corn, millet, steel cut oats and charcoal
Cackle Fine Chick Feed.....	2488	2.3	9.5	2.7	Wheat, corn, kaffir corn, millet, grit, shell and charcoal
Cackle Poultry Feed.....	2736	2.5	9.5	5.0	Wheat, corn, kaffir corn, barley, oats, sunflower seed, grit, shell and charcoal

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Edwards & Loomis Co., Chicago, Ill. Red Comb Poultry Feed.....	2757	2.5	10.0	5.0	Wheat, corn, kaffir corn, barley, oats, sunflower seed, buckwheat, grit, shells and charcoal
Red Comb Poultry Feed, No Grit.....	2799	2.5	10.0	5.0	Wheat, corn, kaffir corn, barley, oats, sunflower seed, buckwheat and charcoal
Red Comb Fine Chick, With Grit.....	2908	2.5	10.0	5.0	Wheat, corn, kaffir corn, millet seed, steel cut oats, grit and charcoal
Elliott Grocery Company, Distributors, Logansport, Ind. Index Brand Chick Feed.....	2239	2.5	10.0	3.5	Wheat, corn, kaffir corn, millet, hulled oats and charcoal
Index Brand Poultry Food.....	2290	2.0	9.0	3.5	Wheat, corn, kaffir corn, sunflower seed, rye, barley, buckwheat, linseed oil meal
Emison & Co., J. & S., (Baltic Mills) Vincennes, Ind. Blue Diamond Little Chicken Feed.....	2987	4.0	10.0	2.5	Wheat, corn, barley, millet, field seeds, carbonate of lime
Blue Diamond Poultry Feed.....	2988	5.0	11.0	3.5	Wheat, corn, kaffir corn, oats, barley, sunflower seed, corn germ, field seeds and carbonate of lime
Flack Bros., East Chicago, Ill. Poultry Food.....	1333	2.5	10.0	10.0	Wheat, corn, kaffir corn, barley, rye, buckwheat, charcoal, oyster shells and grit
Goeke Co., Edward F., Evansville, Ind. Four X Scratch Feed.....	1980	2.0	8.0	10.0	Wheat, barley, oats, corn, wild weed seeds and oyster shells
Good Luck Mills, St. Louis, Mo. Good Luck Mill Feed—Chick Size.....	2912	3.6	10.0	6.0	Wheat, corn, kaffir corn, milo maize, millet, grit and field seeds
Good Luck Mill Feed—Scratch Size.....	2913	3.6	10.0	6.0	Wheat, corn, oats, barley, kaffir corn, milo maize, sunflower, grits and field seeds
Goodrich Bros., Hay & Grain Co., Winchester, Ind. "Climax" Chick Starter.....	2546	2.1	6.5	4.0	Wheat, corn, buckwheat, millet, amber cane, meat and bone meal
Gotto, O. W., Michigan City, Ind. Star Brand Scratch Feed.....	2728	2.5	10.0	10.0	Wheat, corn, kaffir corn, barley, sunflower seed, charcoal, grit and oyster shell
Great Western Cereal Company, The, Chicago, Ill. Sterling Chick Feed.....	2458	3.5	11.0	5.0	Corn, barley, oats and seeds
Sterling Scratch Feed.....	2459	3.0	11.0	6.0	Corn, barley, oats and seeds
Habig Bros., Indianapolis, Ind. Habig Bros. Chick Food.....	2521	5.0	8.0	4.0	Wheat, corn, kaffir corn, millet seeds and grit
Hartman & Sons, Louis, New Albany, Ind. Chicken Feed.....	2022	2.5	10.0	7.0	Wheat, corn, kaffir corn, sunflower seed, wheat screenings and grit

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Haynes Milling Co., The, Portland, Ind. U. B. Egg Producer.....	2684	2.5	10.0	8.0	Wheat, corn, oats, kaffir corn, barley, buckwheat, sunflower seed, wheat screenings and oil meal
U. B. Chick Starter	2668	2.0	9.0	6.0	Wheat, kaffir corn, corn, millet, grit and charcoal
Heltschmidt, A. C., Michigan City, Ind. Heltschmidt's Screenings.....	2561	2.5	10.0	6.0	Wheat, corn, barley, oats, kaffir corn, buckwheat, sunflower, shells and grit
Hermann & Co., J. G., Indianapolis, Ind. Hermann's Choice Scratching Grains....	2647	3.0	10.5	10.0	Wheat, corn, kaffir corn, buckwheat, barley, sunflower seed, seeds
Hermann's Choice Beef Scraps.....	2798	10.0	65.0	0.0	Meat product
Hermann's Choice Meat and Bone.....	2880	6.0	40.0	0.0	Meat and bone
Hoodelmier, H. C., Auburn, Ind. Hoodelmier's Chick Feed.....	1786	2.5	10.0	12.0	Wheat, corn, kaffir corn, millet, grit and charcoal
Hoodelmier's Chicken Feed.....	1981	2.5	10.0	12.0	Wheat, corn, oats, barley, kaffir corn and oyster shell
Illinois Feed Mill, St. Louis, Mo. Feed-Well Mill Feed—Chick and Hen Size	567	3.0	9.0	6.0	Wheat, corn, oats, barley, kaffir, milo maize, flax, millet, buckwheat, seeds and grit
Illinois Seed Co., Chicago, Ill. Coin Brand, Poultry Feed.....	190	3.0	10.5	4.5	Wheat, barley, oats, kaffir corn, corn, buckwheat, millet, oyster shells and grit
Monitor Brand, Chick Feed.....	181	3.0	10.5	3.0	Wheat, corn, millet, kaffir, hulled oats, oyster shells, grit and charcoal
Reliance Brand, Chick Feed.....	182	3.0	10.5	4.0	Wheat, millet, kaffir corn, corn, oyster shells and grit
Pennant Brand, Pigeon Feed.....	183	3.0	10.5	4.0	Wheat, corn, kaffir corn, millet, buckwheat, hemp, peas and grit
Phoenix Brand, Poultry Feed.....	184	3.0	10.5	4.5	Wheat, barley, oats, corn, kaffir corn, buckwheat, millet, sunflower, oil cake, charcoal, oyster shell and grit
Indiana Seed Co., Indianapolis, Ind. Monument Brand Hen Food.....	983	2.8	6.2	5.0	Wheat, corn, kaffir corn, oats, barley, buckwheat, sunflower seed and grit
Monument Brand Poultry Food.....	2192	3.0	10.5	3.7	Wheat, corn, kaffir corn, buckwheat, barley, sunflower seed and seeds
Monument Brand Chick Food.....	2245	3.0	10.5	4.5	Wheat, corn, kaffir corn, millet, flax, seeds and charcoal
Knoke & Co., H. C., Chicago, Ill. Perfecto Poultry Food.....	2637	3.0	10.5	5.0	Wheat, corn, kaffir corn, barley, oats, buckwheat, sunflower seed and grit
Koerner-Wolsiffer Company, Indianapolis, Ind. Star Scratch and Chick Feeds.....	1770	3.7	9.0	6.0	Wheat, corn, kaffir corn, oats, buckwheat and sunflower seeds

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Kothe, Wells & Bauer Co., Distributors, Indianapolis, Ind. Cub Brand Chick Food.....	2291	2.5	10.0	3.5	Wheat, corn, kaffir corn, millet, bulled oats and charcoal
Cub Brand Poultry Food.....	2292	2.0	9.0	3.5	Wheat, corn, kaffir corn, sunflower seed, rye, barley, buckwheat and linseed oil meal
Kuhn & Co., John H., Michigan City, Ind. Kuhn's Scratch Feed.....	2731	2.5	9.5	10.0	Wheat, corn, kaffir corn, barley, rye, buckwheat, grit and oyster shells
LaFayette Grocery Company, LaFayette, Ind. Fayette	2878	2.3	9.8	3.8	Wheat, corn, kaffir corn, millet and grit
Linkhart, John W., North Vernon, Ind. Linkhart's Chick Feed.....	2908	2.0	9.5	8.0	Wheat, corn, rye, millet, wheat screenings, clover seed screenings, charcoal and oyster shells
Loughry Bros. Milling & Grain Co., Monticello, Ind. Loughry's Star Poultry Feed.....	2623	2.5	10.0	4.5	Wheat, corn, oats, buckwheat, millet, kaffir corn, sunflower seed, seeds, shells, charcoal and grit
Loughry's Star Chick Feed.....	2624	2.5	10.0	4.5	Wheat, corn, millet, kaffir corn, oats, seeds, charcoal and grit
Maginot Bros., Hammond, Ind. Maginot Scratch Feed.....	2655	2.0	10.0	10.0	Wheat, corn, kaffir corn, barley, buckwheat, sunflower seed, linseed cake, shells, grit and charcoal
Maines & Hamilton, Rensselaer, Ind. Crown Brand Poultry Food.....	1985	3.9	9.0	7.0	Wheat, corn, kaffir corn, barley, millet, buckwheat, sunflower seed and charcoal
Martin Produce Co., West LaFayette, Ind. Martin's Special Mixed Feed.....	445	3.0	8.0	5.0	Wheat, corn, oats, kaffir corn, peas, millet, hemp, buckwheat, sunflower seed, rye, barley, charcoal, grit, oyster shells and bone
Martin's Special Chick Feed.....	446	2.0	8.0	5.0	Wheat, corn, oats, millet, hemp, grit, charcoal and bone
Martin's Special Poultry Mash.....	2747	3.0	12.0	8.0	Wheat bran, shorts, oats, corn meal, alfalfa meal, oil meal, beef scraps, bone, charcoal and salt
Mayflower Mills, Fort Wayne, Ind. Mayflower Poultry Feed.....	880	2.5	10.0	2.0	Wheat, corn, kaffir corn, screenings, buckwheat, grit and charcoal
Mayflower Chick Food.....	831	2.0	10.0	1.7	Wheat screenings, wheat, corn, kaffir corn, millet, flax screenings and grit
Admiral Chick Food.....	1732	2.5	10.0	2.0	Wheat, corn, kaffir, seeds, oats, milo maize, flax, millet, grit and charcoal
Bon Ton Poultry Food.....	1733	2.5	10.0	2.0	Wheat, corn, barley, kaffir, oats, milo maize, seeds, flax, buckwheat, grit and charcoal

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Midland Poultry Food Co., Kansas City, Mo. Midland Poultry Food, No. 4.....	2123	3.3	17.7	7.0	Wheat bran, wheat shorts, corn, oats, animal matter, charcoal and grit	
Midland Poultry Food, Chick Feed.....	2303	2.9	10.0	2.5	Wheat, corn, kaffir corn and millet	
Midland Poultry Food, Scratch.....	2304	2.1	9.4	2.5	Wheat, corn, kaffir corn and sunflower seed	
Moellering Bros. & Millard, Fort Wayne, Ind. Peerless Poultry Food.....	1808	2.5	10.0	2.0	Wheat, corn, barley, oats, kaffir corn, seeds, milo maize, flax, buckwheat, grit and charcoal	
Climax Chick Food.....	1809	2.5	10.0	2.0	Wheat, corn, oats, kaffir corn, seeds, milo maize, flax, millet, grit and charcoal	
McCullough, J. Chas., Cincinnati, Ohio. Acme Chick	2048	3.0	11.0	10.0	Screenings from wheat, corn, kaffir corn, rye, oats, timothy, clover and millet seed	
Bell Grain and Seed and Screenings.....	2262	3.0	10.0	11.0	Wheat, corn, kaffir corn, rye, oats, barley, buckwheat, millet seed, cane seed, sunflower seed and screenings, principally of grain, millets, cane, clover and sunflower seeds and grit	
Acme Chick, Cracked Grain and Seeds and Screenings	2220	3.0	10.0	11.0	Wheat, corn, kaffir corn, buckwheat, millet seed, cane seed and screenings, principally from grain, millet seed, cane seed and clover seed and grit	
McNeill-Higgins Co., Chicago, Ill. High Life Chick Feed.....	2454	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn, charcoal and marble grit	
High Life Hen Feed.....	2455	3.5	10.5	4.5	Wheat, barley, oats, corn, kaffir corn, buckwheat, sunflower seed, charcoal and oyster shells	
Neill & VanValer, Jonesboro, Ind. Chick Feed	2410	3.0	10.5	20.0	Wheat, corn, oats, millet, seeds, grit and shells	
New Albany Milling Co., New Albany, Ind. "Scratch Chicken Feed".....	2603	3.0	10.0	7.0	Wheat, corn, oats, barley, kaffir corn, sunflower seed, millet and oyster shells	
North West Mills Co., Winona, Minn. Sugarota Chicken Feed.....	2320	3.5	12.0	14.0	Wheat, corn, barley, millet, wheat bran, shorts, middlings, red dog flour and oat clippings	
Sugarota Scratch Feed.....	2522	3.5	12.0	12.0	Wheat, corn, barley and seeds	
Ohio Valley Seed Co., Evansville, Ind. Bell Brand Poultry Feed.....	1185	3.9	11.3	7.0	Wheat, corn, oats, barley, kaffir corn, whole seeds, bone and beef scraps	
O. K. Seed Store, Indianapolis, Ind. O. K. Scratch Feed.....	2362	2.7	10.0	10.0	Wheat, corn, oats, wheat screenings and non-germinating garden seeds	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain			and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber	
Owens Flour, Feed and Seeds, E. G., Wash- ington, Ind. Owens Scratch Feed	1898	2.5	9.0	7.0	Wheat, corn, kaffir corn, oats, sunflower seed, shell, grit and charcoal
Pennsylvania Elevator & Supply Co., In- dianapolis, Ind. Gold Medal Poultry Food.....	2723	2.5	10.2	4.0	Wheat, corn, kaffir corn, barley, sunflower seed and grit
Perfect & Co., A. H., Fort Wayne, Ind. Perfect Scratching Grains.....	2999	2.5	10.0	5.0	Wheat, white and yellow corn, kaffir corn, barley, rye, buck- wheat, sunflower seed, charcoal
Perfect Chick Feed.....	3000	2.5	10.0	5.0	Wheat, white and yellow corn, kaffir corn, millet, charcoal
Perry Feed Mill, H. D., Hartford City, Ind. Perry's Chick Feed.....	1913	2.5	10.0	12.0	Corn, kaffir corn, millet, bone, charcoal and grit
Perry's Scratch Feed.....	1914	2.5	10.0	11.0	Corn, oats, wheat, kaffir corn, buckwheat, charcoal and grit
Peters Mill Co., M. C., Omaha, Neb. Red Feather Chick Feed.....	1863	2.5	11.0	5.0	Wheat, kaffir corn, meat meal and seeds
Quaker Oats Company, The, Chicago, Ill. Schumacher Scratching Grains.....	1763	3.0	10.5	4.5	Wheat, barley, corn, kaffir corn, buckwheat, sunflower seed and charcoal
Purity Hen Feed.....	2324	3.0	10.5	4.5	Wheat, barley, oats, buckwheat, sunflower seed, corn, kaffir corn and charcoal
Prize Winning Hen Feed.....	2325	3.0	10.5	4.5	Wheat, barley, oats, buckwheat, sunflower seed, corn, kaffir corn and charcoal
Quaker Scratching Grains.....	2326	3.0	10.5	4.5	Wheat, barley, oats, buckwheat, sunflower seed, corn, kaffir corn and charcoal
Blue Ribbon Scratching Grains.....	2327	3.0	10.5	4.5	Wheat, barley, oats, buckwheat, sunflower seed, corn, kaffir corn and charcoal
Blue Ribbon Little Chick Feed.....	2328	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn and charcoal
Purity Little Chick Feed.....	2329	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn and charcoal
Prize Winning Little Chick Feed.....	2330	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn and charcoal
Schumacher Little Chick Feed.....	2331	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn, charcoal and marble grit
Quaker Little Chick Feed.....	2332	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn, charcoal and marble grit
Schumacher Little Chick Feed, Without Grit	2413	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn and charcoal
Quaker Little Chick Feed, Without Grit	2414	3.5	10.5	3.0	Wheat, corn, millet, kaffir corn and charcoal
American Hen Scratching Grains.....	2003	3.0	9.5	4.5	Wheat, corn, kaffir corn, barley, buckwheat, sunflower seed, char- coal and grit
Perfect Chick Feed.....	2376	2.5	10.0	5.0	Wheat, corn, kaffir corn, millet and charcoal
Perfect Scratching Grains.....	2377	2.5	10.0	5.0	Wheat, corn, kaffir corn, rye, barley, buckwheat, sunflower seed and charcoal

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent.	Grude Fat	Not less than per cent.	Grude Protein	
					Not more than per cent.	Grude Fiber
Quaker Oats Company, The, Chicago, Ill. American Little Chick Feed.....	2969	2.5	10.0	5.0	Wheat, corn, kaffir corn, millet, charcoal and grit	
Plow Boy Chick Feed.....	2960	2.5	10.0	5.0	Wheat, corn, kaffir corn, millet and charcoal	
Plow Boy Scratching Grains.....	2971	2.5	10.0	5.0	Wheat, corn, kaffir corn, barley, rye, buckwheat, sunflower seed and charcoal	
Quaker Chick Feed.....	2977	2.5	10.0	5.0	Wheat, corn, kaffir corn, millet and charcoal	
Balston Purina Co., St. Louis, Mo. Purina Mash	956	5.0	17.0	11.5	Wheat, corn, oats, barley, kaffir, milo maize, flax, millet, buckwheat, seeds and beef scraps	
Success Mill Feed—Chick and Scratch Size	1760	3.0	9.0	6.0	Wheat, corn, oats, barley, kaffir, milo maize, grits and seeds	
Mill Feed—"Chick and Scratch Size".....	1823	3.0	9.0	6.0	Wheat, corn, barley, oats, kaffir, milo maize, seeds and grit	
Purina Mill Feed—Scratch Size.....	2745	3.6	11.0	4.0	Wheat, corn, oats, barley, kaffir corn, milo maize, sunflower and field seeds	
Purina Mill Feed—Chick Size.....	2746	3.6	11.0	4.0	Wheat, corn, kaffir corn, milo maize, millet and field seeds	
Bauh & Sons, E., Indianapolis, Ind. Rauh's Poultry Food.....	535	10.0	65.0	0.0	Meat meal	
Rensselaer Mill & Feed Store, Rensselaer, Ind. Crown Brand Poultry Food.....	1314	3.9	9.0	7.0	Wheat, corn, kaffir corn, sunflower seed, barley, millet, buckwheat and charcoal	
Rittenhouse, E. S., Liberty Mills, Ind. "All-In" Chick Feed.....	375	3.0	10.0	6.0	Wheat, corn, kaffir corn, millet, hemp, beef scraps, oat groats, bone, grit and charcoal	
"All-In" Chick Starter	376	3.0	10.0	6.0	Wheat, corn, kaffir corn, millet, oats, beef scraps, hemp, bone, grit and charcoal	
Robinson-Danforth Company, St. Louis, Mo. Superior Mill Feed, (Chick & Scratch Size)	2219	3.0	9.0	6.0	Wheat, corn, oats, barley, kaffir, milo maize, seeds and grit	
Mill Feed, Chick Size	2914	3.6	10.0	6.0	Wheat, corn, kaffir corn, milo maize, millet, grits and field seeds	
Mill Feed, Scratch Size.....	2915	3.6	10.0	6.0	Wheat, corn, oats, barley, kaffir corn, milo maize, sunflower, grits and field seeds	
Scholz & Co., Paul J., Whiting, Ind. Poultry Feed	1400	2.5	10.0	10.0	Wheat, corn, oats, barley, kaffir corn, buckwheat, sunflower seeds, grit, oyster shells and charcoal	
Shine & Co., John H., New Albany, Ind. Star Poultry Feed.....	2031	2.5	10.0	9.0	Wheat, corn, kaffir corn, sunflower seed, millet and other seeds, charcoal and grits	
Sleepy Eye Milling Co., Sleepy Eye, Minn. Sleepy Eye Chick Food.....	1591	1.9	13.1	1.8	Wheat, corn and shelled buckwheat	
Sleepy Eye Poultry Food.....	1593	2.7	11.3	3.0	Wheat, corn, kaffir corn, grit, charcoal and oyster shell	
Sleepy Eye Scratch Food.....	2030	2.1	10.0	3.7	Wheat, corn, barley and kaffir corn	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Small & Co., Inc., W. H., Evansville, Ind. "Eclipse" Poultry Feed.....	1864	5.0	9.4	3.1	Wheat, corn, kaffir corn, sunflower seed, and oyster shell	
"Eclipse" Chick Feed.....	1963	3.5	9.5	2.5	Wheat, corn, kaffir corn and millet seed	
Smith, Roper & Co., Hobart, Ind. Hobart Hen Feed.....	2688	1.8	9.0	10.0	Wheat, corn, kaffir corn, barley, buckwheat, shell and grit	
Southern Seed Co., Louisville, Ky. "Atlas Brand"	961	2.9	12.0	7.0	Wheat, corn, oats, rye, millet, kaffir corn, rape, cane seeds, seed screenings, peas, beans and crushed shells	
Atlas Brand Hen Feed.....	1922	2.7	11.0	7.0	Wheat, corn, oats, rye, millet, rape, kaffir corn, cane seed, peas and beans	
Atlas Brand Chick Feed.....	1923	2.7	11.0	7.0	Wheat, corn, oats, rye, millet, rape, kaffir corn, cane seed, peas and beans	
"Atlas" Scratch Feed.....	2044	3.6	10.0	6.0	Wheat, corn, barley, kaffir corn, milo maize and sunflower seed	
Atlas Superior Chick Feed.....	2045	3.6	10.0	6.0	Wheat, corn, millet, kaffir corn, milo maize and seeds	
Sowash, Eph. K., Middletown, Ind.* E. K. Chic Starter and Feed.....	2333	2.0	9.0	7.0	Wheat, corn, kaffir corn, oats, millet, screenings, oil meal, charcoal and grit	
Sprague, Warner & Co., Chicago, Ill. Cereal Brand Chicken Feed.....	1741	2.9	10.5	4.0	Wheat, corn, oats, kaffir corn, barley and sunflower seed	
Richelleu Brand Chick Food.....	1742	2.9	11.0	4.5	Wheat, corn, kaffir corn, oat groats, millet, charcoal and fine grit	
Richelleu Brand A. Chick Food.....	1907	2.9	11.0	4.0	Wheat, corn, kaffir corn, oats, barley and millet	
Chico Brand Chick Feed.....	2889	2.9	10.0	4.0	Wheat, corn, kaffir corn, oats, barley, millet and charcoal	
Cero Brand Poultry Feed.....	2890	2.9	10.0	4.0	Wheat, corn, kaffir corn, oats, barley, sunflower seeds and charcoal	
Steinmesch Feed & Poultry Supply Co., St. Louis, Mo. Steinmesch Select Hen Feed.....	799	3.0	11.0	9.0	Wheat, corn, kaffir corn, barley, oats, whole seeds, grit and oyster shells	
Steinmesch Extra Quality Chick Feed....	1824	3.0	12.6	9.0	Wheat, corn, kaffir corn, oats, barley, seeds, grit and oyster shell	
Swift & Company, Chicago, Ill. Swift's Ideal Poultry Food.....	57	6.0	50.0	0.0	Meat residue and bone	
Swift's Beef Scraps.....	59	12.0	55.0	0.0	Meat residue	
Swift's Poultry Bone.....	62	0.0	25.0	0.0	Bones containing 55% phosphates	
Troup, Irvin, Milford, Ind. Chick Feed	2970	2.5	9.0	10.0	Wheat, corn, kaffir corn, millet and grit	
Union Grain & Coal Company, The, Anderson, Ind. Union Chick Feed.....	3003	2.0	9.0	10.0	Wheat, corn, kaffir corn, millet, oyster shells, charcoal	
Union Hen Feed.....	3004	2.0	9.0	10.0	Wheat, corn, oats, kaffir corn, millet, oyster shells, charcoal	

*Succeeded by Daniels & Pickering Co.

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
United Cereal Company, Chicago, Ill. Gold Medal Poultry Food.....	2282	2.0	9.0	5.0		Wheat, corn, kaffir corn, barley, sunflower seed, buckwheat, oats, linseed oil meal, charcoal and grit
Gold Medal Chick Feed.....	2283	2.5	9.5	3.5		Wheat, corn, kaffir corn, millet, oat groats, hulled oats, charcoal and grit
Volland Milling Co., The, Fort Wayne, Ind. Volland's Daisy Poultry Food.....	2777	2.0	8.0	10.0		Wheat, corn, kaffir corn, oats, rye, barley, sunflower seed and buckwheat
Weiss Alfalfa Stock Food Co., The Otto, Wichita, Kansas. Otto Weiss Hen Feed.....	1784	3.0	13.8	2.5		Wheat, corn, kaffir corn, oats, cane seed, millet, beef scraps, bone, grit and oyster shells
Otto Weiss Chick Feed.....	1785	3.0	13.6	2.8		Wheat, kaffir corn, oats, millet, cane seed, beef scraps, bone and grit
Wimer, Brown & Co., Auburn, Ind. Chick Feed	2612	2.5	10.0	12.0		Wheat, corn, kaffir corn, millet, grit and charcoal
Chicken Feed	2531	2.5	10.0	12.0		Wheat, corn, oats, barley, kaffir corn and oyster shells
22—CONDIMENTAL STOCK AND POULTRY FOODS						
Acme Food Company, Chicago, Ill. Acme Food	1239	6.4	18.9	5.5		Flax seed products, corn products, cotton seed products, pea meal, ground rhubarb, African ginger, blood root, tamarack bark, gentian root, anise, caraway, fenugreek, charcoal, salt and sulphur
Alfalfa Food Co., Indianapolis, Ind. Alfalfa Stock Food.....	2435	3.5	14.5	4.0		Gentian, ginger, capsicum, salt, charcoal, alfalfa and wheat middlings
American Stock Food Co., West College Corner, Ind. American Poultry Food.....	2026	0.0	0.0	0.0		Sodium sulphate, iron sulphate, gentian, ginger, alum, Spanish brown and cob meal
American Stock Food.....	2027	1.0	10.0	9.0		Iron sulphate, soda bicarbonate, sodium chloride, magnesium sulphate and oil meal
Banta-Bender Mfg. Co., Ligonier, Ind. Banta Chick Feed	1873	3.0	16.0	10.0		Wheat, corn, millet, rape, kaffir corn, alfalfa, hemp, peas, sunflower seed, weed seeds, cotton seed meal, blood meal, bone meal, meat meal, shell, grit, salt and sulphur
Barwell, J. W., Waukegan, Ill. Blatchford's Sugar and Flaxseed.....	1048	10.0	27.0	5.5		Locust bean meal, flaxseed, lentils, gentian, fenugreek and anise

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Boulder, Wm., Cyclone, Ind. Boulder Stock Food.....	1392	3.1	15.2	11.0	Salt, soda, assafoetida, sulphur, horse medley, blood root, sunflower seed, ginger, charcoal, salt peter and oil cake	
Brinkman, Wm. E., Fort Wayne, Ind. Superior Poultry Food.....	1507	2.5	7.0	5.0	Oat meal, corn meal, middlings, bone meal, Venetian red, capsicum and salt	
Carter Stock Food Co., Elwood, Ind. Carter's Stock Regulator.....	2783	15.0	22.0	30.0	Blood root, poplar bark, May apple root, gentian, fenugreek, antimony, rosin, copperas, sulphur, charcoal, salt, tobacco, clover tops and flaxseed meal	
Columbian Stock Food Co., Detroit, Mich. Columbian Stock Food.....	1353	2.7	10.0	11.0	Sodium sulphate, red pigment, sulphur, wood carbon, fenugreek, sodium chloride and wheat product	
Columbian Regulator	1354	2.5	10.0	11.0	Sodium chloride, yellow pigment, redried sulphate of iron, sulphur, fenugreek, sodium sulphate, wood carbon and wheat product	
Columbian Poultry Food.....	1355	2.8	10.5	11.0	Carbonate of lime, red pigment, sulphur, yellow pigment, sodium sulphate, capsicum, oyster shells and wheat product	
Crosier Stock & Poultry Powder Co., The, New Albany, Ind. Crosier Stock Food.....	1046	6.8	10.6	6.0	Ginger, black antimony, sulphur, potassium nitrate, sodium sulphate, saffron, gentian, sulphate of iron, sodium chloride, charcoal, carbonate of lime, carbonate of potash, blood root, fenugreek, flaxseed and wheat product	
Ehrmann & Co., Terre Haute, Ind. Ehrmann's Poultry Food.....	666	15.0	6.0	24.7	Pork and beef cracklings, bone meal, cayenne pepper and carbolic acid	
Empire Drug Store, Indianapolis, Ind. Empire Stock and Poultry Powder.....	2904	4.0	19.0	10.0	Elecampane, fenugreek, juniper berries, coriander seed, gentian, valerian, blood root, lobelia, mandrake, poplar bark, black mustard, rosin, licorice root, ginger, sodium sulphate, sodium chloride, sodium carbonate, sulphur, iron sulphate, potassium nitrate, black antimony, alum, flaxseed and linseed meal	
Furst, Mc Ness Company, Freeport, Ill. F. W. Mc Ness' Stock Food.....	2206	8.2	13.5	12.4	Capsicum, coriander, ginger, quassia, sodium chloride (common salt), charcoal (carbo ligni), fenugreek, sulphur, sulphate of iron (ferrous sulphate), potassium nitrate, sodium sulphate (Glauber salts) Levant wormseed (santonin) and middlings	

TABLE IX.—Brands Registered and on Sale (continued)

L A B E L	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
German Food Co., Indianapolis, Ind. German Poultry Food.....	672	3.8	10.8	3.0		Salt, brick red, charcoal, gentian, sassafras, capsicum, pigeon grit and middlings
German Stock Food.....	673	1.8	11.9	3.2		Charcoal, rosin, salt, gentian and middlings
Griffin Co., W. M., The, Fort Wayne, Ind. Griffin Stock Mixture.....	2137	3.0	16.0	7.0		Peruvian bark, turmeric, licorice, anise seed, coriander, gentian, antimony, fenugreek, ginger, sulphur, saltpetre, cream tartar, bicarbonate soda, salt, corn meal, oil meal and locust bean meal
Griffin Poultry Compound.....	2139	1.0	6.0	3.0		Cantharides, capsicum, ginger, saltpetre, sulphur, bone meal and shells
Griffin Condition Powder.....	2139	4.4	20.0	7.0		Ginger, gentian, fenugreek, nuxvomica, epsom salts, oil meal
Hale, G. S., Fort Wayne, Ind. Hale's Spanish Poultry Powder.....	750	3.7	14.0	10.0		Sulphur, Venetian red, black antimony, capsicum and corn meal
Hawks, D. H., Goshen, Ind. Excelsior Horse and Cattle Powder.....	1427	16.0	14.0	8.0		Ginger, fenugreek, blood root, sassafras, elecampane, nitrate of potash, gentian, rosin, sulphate of iron, sodium chloride, sulphate of magnesia, sulphur, oil meal and oil cake
Hinshaw & Hughes, Elwood, Ind. H. & H. Stock and Poultry Food.....	512	4.0	26.0	10.0		Gentian, fenugreek, black antimony, sulphur, charcoal, asafoetida, cream of tartar, ginger, poplar bark, blood root, May apple, copperas, salt and linseed meal
Hoosier Stock Food Co., Gosport, Ind. Hoosier Stock Food.....	2181	4.5	27.0	10.0		Gentian, sulphur, sal niter, resin, fenugreek seed, ginger, alum, cayenne, antimony, blood root, sulphate of iron, salt and linseed oil meal
Lee Co., George H., Omaha, Neb. Lee's Egg Maker and Chick Grower.....	1365	3.0	35.0	5.0		Granulated blood, linseed meal, potassium nitrate, sodium sulphate, ginger, gentian, fenugreek, iron sulphate, cayenne, salt, sulphur and charcoal
Lewis Waukarusha Stock Food Co., The, Lee, Ind. Waukarusha Stock Food.....	1090	5.5	23.0	11.0		Oil meal, sulphur, rosin, sulphate of iron and saltpetre
Linton, Thos. Allen, R. F. D. No. 23, Sheridan, Ind. Linton's Stock and Poultry Food.....	1330	9.0	22.0	10.0		Blood root, May apple, charcoal, poplar bark, sulphur, Jamaica ginger, gentian, fenugreek, asafoetida, horse medley, sodium chloride, oil cake and linseed meal

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Maple City Stock Food Co., LaPorte, Ind. Maple City Stock Food and Conditioner.....	1962	6.6	8.6	3.2		Salt, saltpetre, resin, sulphur, ashes, wheat middlings, buckwheat middlings and linseed oil
Medicura Food Co., Indianapolis, Ind. Medicura Stock Food.....	689	3.3	7.4	4.4		Gentian, blood root, capsicum, salt, black antimony, rosin, copperas, charcoal and wheat middlings
Medicura Poultry Food.....	640	3.7	7.4	3.4		Capsicum, gentian, copperas, sassafras, salt, Spanish brown, charcoal, marble grits and wheat middlings
O. K. Stock Food Co., The, Chicago, Ill. O. K. Stock Food.....	1506	6.8	32.8	8.3		Fenugreek, gentian, sodium chloride, linseed meal and charcoal
O. K. Poultry Food.....	1506	6.9	27.5	8.0		Fenugreek, gentian, sodium chloride, sub-carbonate of iron, charcoal, linseed meal and middlings
Parker & Rice, Goshen, Ind. I. X. L. Horse and Cattle Powder.....	1448	8.1	18.3	10.3		Sulphur, magnesium sulphate, fenugreek, ginger, capsicum, oil cake and linseed meal
I. X. L. Poultry Powder.....	1444	17.0	12.9	16.3		Charcoal, sulphur, capsicum, ginger, Venetian red and oil meal
Pearl Packing House, The, Madison, Ind. The Pearl Brand.....	1778	17.8	33.0	6.3		Meat, bone, fenugreek, anise seed and sulphur
Peele Food Co., The, Frankfort, Ind. Peele's Poultry Powder and Improved Egg Producer	474	5.4	31.2	12.2		Fenugreek, gentian, willow charcoal, sulphur, capsicum, African ginger, sodium phosphate, oyster shells, princess metallic and oil meal
Peele's Stock Conditioner.....	475	5.6	31.5	12.0		Gentian, assafoetida, fenugreek, willow charcoal, sulphur, African ginger, poplar bark, cream of tartar, Glauber salts, sodium chloride, blood root and oil meal
Pratt, L. W., Andrews, Ind. Pratt's Hoosier Stock Food.....	2769	3.0	18.0	10.0		Iron sulphate (copperas), potassium nitrate (saltpetre), gentian, fenugreek, charcoal, salt and oil meal
Prussian Remedy Co., St. Paul, Minn. Prussian Stock Tonic.....	1713	3.0	10.0	12.0		Gentian, anise seed, fenugreek, sulphur, elecampane, ginger, assafoetida, charcoal, sodium sulphate, sassafras, licorice root, capsicum, chenopodium, curcuma, sodium chloride, ferri sulphate, flax and shorts
Prussian Poultry Tonic.....	1977	1.0	5.0	20.0		Gentian, anise seed, fenugreek, sulphur, elecampane, ginger, assafoetida, charcoal, sodium sulphate, sassafras, licorice root, capsicum, chenopodium, curcuma, sodium chloride, ferri sulphate, flax, shorts, bone meal and oyster shells

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
Ragon Stock Food Co., D. S., Evansville, Ind. Farmers Stock Food.....	251	4.8	13.5	6.7	Charcoal, gentian, ginger, capsicum, sassafras, percon root, poplar bark, sodium chloride and pure wheat product	
Farmers Poultry Food.....	253	5.6	16.3	8.0	Gentian, ginger, copperas, charcoal, sassafras, capsicum, powdered bone and wheat product	
Rawleigh Medical Co., The W. T., Freeport, Ill. "Rawleigh's Imperial Stock Food".....	428	5.0	12.5	12.5	Fenugreek, sodium chloride or salt, quassia, gentian, ginger, capsicum, carbo ligni or charcoal, anise seed, coriander, sulphur, sodium phosphate, iron sulphate, worm seed and middlings	
Rawleigh's Medicated Stock Food.....	2008	8.0	12.5	12.5	Fenugreek, sodium chloride, quassia, gentian, ginger, capsicum, carbo ligni, anise seed, coriander, sulphur, sodium phosphate, iron sulphate, worm seed and middlings	
Shrader Drug Co., Iowa City, Iowa. Eureka Stock Food.....	756	6.7	30.9	9.5	Anise seed, blood root, charcoal, fenugreek, gentian, ginger, licorice, linseed meal and salt	
Eureka Poultry Food.....	1202	5.0	17.6	6.1	Bone meal, gentian, fenugreek, blood root, capsicum, carbonate of iron and middlings	
Snyder Stock Food Co., Dr., New Harmony, Ind. Dr. J. H. Snyder's Stock Food.....	513	4.0	14.0	8.0	Sulphur, fenugreek, charcoal, salt, iron, rosin, Glauber salts, oil cake, wheat shorts	
Standard Stock Food Co., Omaha, Neb. Standard Poultry Food.....	1002	0.0	0.0	0.0	Gentian root, ginger root, capsicum, dried blood, bone meal, charcoal, salt, alfalfa meal and oyster shells	
Standard Stock Food.....	1003	0.0	0.0	0.0	Anise seed, caraway seed, coriander seed, fenugreek seed, gentian root, ginger root, licorice root, yellow dock root, capsicum, sulphur, bicarbonate of soda, salt, charcoal, oil meal and corn germ	
Standard Milk Meal.....	1004	5.0	30.0	4.0	Dried milk, oil meal, oat meal, bone meal, dried blood, fenugreek seed, anise seed, gentian root, powdered chalk and salt	
Stevens Stock Food Co., Wabash, Ind. Stevens Stock Food.....	1000	3.0	12.0	0.0	Gentian, sassafras bark, buchu leaves, nitrate of potash, sodium chloride, willow charcoal, fenugreek and wheat middlings	
United Breeders Co., of America, Syracuse, N. Y. Baum's Hog Tonic	3057	1.0	1.0	1.0	Worm seed, areca, gentian, ginger, sodium hypo sulphite, nitre, berberis aquifolium, spigelia, mustard seed, charcoal, sodium bi-carbonate, sulphur, magnesium sulphate, sodium chloride and linseed meal	

TABLE IX.—Brands Registered and on Sale (continued)

LABEL	Official number	Guaranteed by the manufacturer to contain				and to be composed of the following ingredients
		Not less than per cent. Crude Fat	Not less than per cent. Crude Protein	Not more than per cent. Crude Fiber		
United Breeders Co., of America, Syracuse, N. Y. Baum's Dairy Tonic.....	2068	1.0	1.0	1.0	Pipsissewa, stillingia, gentian, ginger, sulphate of iron, sulphur, charcoal, capsicum, mustard seed, sodium bi-carbonate, magnesium sulphate, sodium chloride, nitre, yellow dock, licorice root, galega and linseed meal	
Baum's Cattle Tonic.....	2069	1.0	1.0	1.0	Serpentaria, cascara sagrada, gentian, mustard seed, sulphur, magnesium sulphate, sodium bi-carbonate, nitre, charcoal, sodium chloride, licorice root, ginger, capsicum, yellow dock, colombo and linseed meal	
Baum's Horse Tonic.....	2080	1.0	1.0	1.0	Elecampane, gentian, magnesium sulphate, spigelia, sulphate of iron, iron carbonate, sodium bi-carbonate, nitre, capsicum, licorice root, mustard seed, charcoal, sulphur, sodium chloride, ginger, nux vomica, cascara sagrada, worm seed and linseed meal	
Baum's Poultry Tonic.....	2061	1.0	1.0	1.0	Ginger, cayenne pepper, sulphate of iron, gentian, mustard seed, sulphur, charcoal, sodium bi-carbonate, iron carbonate, colombo, nux vomica, magnesium sulphate, sodium chloride and linseed meal	
Weiss Alfalfa Stock Food Co., The Otto, Wichita, Kansas. Alfalfa Conditioner	1214	6.0	18.0	2.0	Antimony, zingiber, sulphur, saltpeter, fenugreek and alfalfa	
Alfalfa Poultry Remedy	1215	16.8	16.5	2.0	Sodium bi-carbonate, zingiber, sulphur, saltpetre, aloes, iron carbonate, capsicum, fenugreek, carbon and alfalfa	
Wilbur Stock Food Co., Milwaukee, Wis. Wilbur's Stock Food.....	189	5.0	15.0	5.0	Charcoal, gentian, fenugreek, ginger, blood root, elecampane, anise seed, elm bark, soda, salt, wheat middlings and ground flax screenings meal	
Wilbur's Poultry Food.....	190	5.0	15.0	5.0	English red, salt, soda, anise seed, elecampane, blood root, fenugreek, gentian, powdered charcoal, wheat middlings and ground flax screenings meal	

TABLE X.—List of Indiana Flour Mills and their Capacities

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Acme-Evans Co.	Indianapolis	Marion	3,000	2,800	*450,000
Acme Milling Co.	Aurora	Dearborn	100	50	15,000
Ahr & Singer	Monroeville	Allen	50	30	1,500
Akin-Erskine Milling Co.	Evansville	Vanderburg	1,500	1,400	222,365
Akron Milling Co.	Akron	Fulton	*75	*25	*2,000
Alton Milling Co.	Alton	Crawford	30	15	1,500
Amboy Milling Co.	Amboy	Miami	75	25	2,500
Amo Mill & Elevator Co.	Amo	Hendricks	75	25	5,000
Anderson, C.	New Waverly	Cass	25	10	500
Anderson & Denzine	Kouts	Porter	50	30	1,000
Anglemeyer, Jerry	Rochester	Fulton	25	10	500
Angola Flouring Mills	Angola	Steuben	25	10	2,000
Arrasmith & Sons, Wm.	Dana	Vermillion	*50	*15	*1,500
Auburn Roller Mills	Auburn	DeKalb	50	30	4,000
Augusta Mill Co.	Augusta	Pike	35	17	1,700
Bachman, Valentine	Indianapolis	Marion	2,000	80	1,000
Bader & Needham	Pulaski	Pulaski	50	—	1,000
Baker, B. H.	Oakland City	Gibson	1,000	40	8,000
Banner Roller Mills	Mooreville	Morgan	75	25	7,000
Barnes & Co., R. J.	Dunkirk	Jay	40	20	5,000
Barrett Elevator Co.	Greenfield	Hancock	80	50	15,000
Batchelor, Fox & Davis	Sharpsville	Tipton	50	25	2,000
Beanblossom & Sons, D. B.	Mauckport	Harrison	50	25	3,000
Bender & Kessen	Siberia	Perry	40	15	1,000
Benham Milling Co.	Benham	Ripley	85	12	1,000
Bergenroth Bros.	Troy	Perry	140	60	9,000
Berne Milling Co.	Berne	Adams	30	15	3,000
Besser, W. T.	Greencastle	Putnam	50	30	3,000
Billman & Sons, C. H.	Shelbyville	Shelby	150	60	15,000
Bischoff & Bros., A. G.	Morris	Ripley	80	35	3,000
Blanton Milling Co.	Indianapolis	Marion	450	225	50,000
Bliss Milling Co.	Seymour	Jackson	1,300	—	300,000
Bloomfield Milling Co.	Bloomfield	Greene	50	25	5,000
Bloomington Milling Co.	Bloomington	Monroe	180	65	16,000
Bluffton Milling Co.	Bluffton	Wells	75	30	3,000
Bock, Leonard	Argos	Marshall	50	20	3,000
Boehmer & Ritzer	Scott	LaGrange	—	—	—
Boelter, C. F.	Union Mills	LaPorte	25	10	1,500
Boldt & Son	Crawfordsville	Montgomery	30	15	3,000
Boles & Jones	Milroy	Rush	30	25	5,000
Boonville Milling Co.	Boonville	Warrick	200	100	20,000
Boston Milling Co.	Eckerty	Crawford	50	20	1,500
Bowling Green Mills	Bowling Green	Clay	50	25	3,750
Bridgeton Roller Mills	Bridgeton	Parke	75	35	6,000
Bristol Milling Co.	Bristol	Elkhart	75	30	*1,500
Bristow Flouring Mills	Bristow	Perry	35	17	1,000
Brizius Co., The Chas.	Evansville	Vanderburg	80	35	5,000
Broadway Mills	Vincennes	Knox	300	120	26,000
Brose & Arnold	Evansville	Vanderburg	200	90	24,000
Brose, Geo.	Evansville	Vanderburg	400	200	50,000
Brown, O. L.	Campbellsburg	Washington	80	30	3,000
Browning & Co.	Alexandria	Madison	50	25	5,000
Brudi & Co., Jos.	New Haven	Allen	60	30	5,000
Brumfield & Co., J. W.	Milton	Wayne	20	8	1,000
Brumfield & Brumfield	Russellville	Putnam	50	15	2,000
Bucheis, Chas. J.	Bluffton	Wells	50	25	3,000
Bundy Mill Co., L. L.	Vallonia	Jackson	50	20	3,000
Bunker Hill Milling Co.	Evansville	Vanderburg	200	100	20,000
Burge Milling Co.	Marion	Grant	100	60	15,000
Burkhart, J. E.	Georgetown	Floyd	50	15	750
Burrell & Morgan	Elkhart	Elkhart	300	175	43,750
Butler Milling Co.	Butler	DeKalb	75	35	8,500
Cable & Keller	Richmond	Wayne	40	20	1,000
Cadick Milling Co.	Grandview	Spencer	200	200	50,000
Calvert Mills	Trevlac	Brown	30	12	1,200
Canaan Milling Co.	Canaan	Jefferson	40	15	2,200
Canine Bros. Milling Co.	Clinton	Vermillion	75	25	4,894
Cannelton Flour Mills	Cannelton	Perry	150	75	18,750
Carlisle Milling & Elevator Co.	Carlisle	Sullivan	75	30	3,000
Carpenter, B. O.	Perrysville	Vermillion	50	25	3,750
Catron Bros.	Flora	Carroll	40	18	3,600
Cauble, O. L.	Pekin	Washington	50	20	4,000

*Estimated

TABLE X—List of Indiana Flour Mills and their Capacities (continued)

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Cable & Dunlevy	Henryville	Clark	50	20	4,000
Cayuga Milling Co.	Cayuga	Vermillion	75	30	6,000
Champion Roller Milling Co.	Richmond	Wayne	200	100	20,000
Charles & Sons, James	Marion	Grant	50	10	3,000
Chelsea Mills, The	Chelsea	Jefferson	40	15	1,500
City Mills, The	Huntington	Huntington	50	15	3,750
City Milling Co., The	Attica	Fountain	125	60	10,000
City Roller Mills	Vevay	Switzerland	80	40	4,000
Clark Bros.	Hagerstown	Wayne	100	40	5,000
Clark & Son, C. G.	Rushville	Rush	100	40	9,000
Claypole, Geo. M.	Sardinia	Decatur	50	20	4,000
Clayton Milling Co.	Clayton	Hendricks	75	30	6,000
Coal City Milling Co.	Coal City	Owen	50	20	3,500
Coal City Milling Co.	Clay City	Clay	50	20	2,000
Columbia City Mill & Elevator Co.	Columbia City	Whitley	50	20	4,000
Columbus Milling Co.	Columbus	Bartholomew	100	45	12,000
Compton Bros.	Engletown	Hamilton	60	15	1,000
Cook & Boyd	Richmond	Wayne	24	19	3,000
Cook & Co., W. A.	Marengo	Crawford	50	20	2,000
Coppes, Zook & Mutschler Co.	Nappanee	Elkhart	400	225	75,500
Corbin Milling Co.	New Harmony	Posey	250	250	75,000
Corunna Mills	Corunna	DeKalb	60	30	3,000
Corydon Milling Co.	Corydon	Harrison	80	40	6,000
Cox & Cox	Carthage	Rush	50	20	3,000
Crescent Milling Co.	Taylorville	Bartholomew	60	25	2,000
Croxton, J. W.	Cloverdale	Putnam	50	20	4,000
Culbertson Bros.	Vevay	Switzerland	65	30	7,500
Cunningham, Jas. W.	Crothersville	Jackson	50	12	2,500
Cuy Kendall, Dor.	Williamsburg	Wayne	25	10	2,000
Dair Bros.	Harrison, Ohio		100	40	6,000
Daisy Mills	Modoc	Randolph	50	20	3,000
Daisy Roller Mills	Brookville	Franklin	50	30	1,000
Dalrymple, J. W.	Rising Sun	Ohio	75	35	3,500
Daniels & Pickering Co.	Middletown	Henry	100	40	10,000
Davis & Johnson	Coatesville	Hendricks	50	20	3,000
Deck, James M.	Roann	Wabash	50	15	2,500
Decker Milling Co.	Decker	Adams	60	20	2,500
Delaware Mills	Albany	Delaware	40	15	500
Deip Grain Co.	Bourbon	Marshall	75	25	6,000
Diamond Roller Mills	Fort Ritner	Lawrence	80	30	4,500
Dilger Bros.	Marlah Hill	Spencer	35	5	1,350
Dillsboro Milling Co.	Dillsboro	Dearborn	60	15	4,500
Dodd & Son, H. C.	Charlestown R. R.	Clark	*25	*19	*500
Doolittle Mills	Doolittle Mills	Perry	25	10	*1,000
Dragoo, B. S. & S. H.	Yorktown	Delaware	60	15	3,000
Dubois Milling Co.	Dubois	Dubois	75	30	3,500
Eagle Roller Mills	South Boston	Washington	50	20	500
Eberts & Bro.	Charlestown	Clark	60	30	5,000
Eberts & Bro.	Jeffersonville	Clark	250	110	28,000
Eberts & Bro.	North Vernon	Jennings	100	50	12,000
Eckert, J. & A.	Jasper	Dubois	100	40	5,000
Eclipse Mill, The	Ramsey	Harrison	25	10	1,000
Edwardsport Milling Co.	Edwardsport	Knox	50	18	2,250
Esley & Co., Wm.	College Corner, O.		100	50	10,000
Egloff & Sons, A.	St. Meinrad	Spencer	35	18	2,700
Ellettsville Mill Co.	Ellettsville	Monroe	40	12	600
Ellis Milling Co., The	Elon	Orange	25	12	1,200
Elnora Milling Co.	Elnora	Davless	50	20	2,000
Emmert, C. B.	Clarksburg	Decatur	25	10	780
English Milling Co.	English	Crawford	80	30	5,500
Enterprise Mill Co.	Bicknell	Knox	50	15	3,000
Enterprise Mill Co.	Milroy	Rush	250	100	12,000
Etna Lumber, Grain & Milling Co.	Etna Green	Kosciusko	50	30	3,000
Ewing Mill Co.	Ewing	Jackson	75	35	7,000
Farmers Mill, The	Huntingburg	Dubois	50	20	3,000
Farmland City Flour Mills	Farmland	Randolph	100	30	3,000
Fette, Nicholas H.	New Alsace	Randolph	50	15	2,000
Fiat Rock Cave Mill	Shelbyville R. R.	Shelby	70	30	3,000
Fohl, Casper	Cedar Grove	Franklin	50	15	3,000
Follett & Co., E. J.	Carmel	Hamilton	50	15	3,000
Forrest Park Mills	Terre Haute	Vigo	40	15	*2,000
Fornax Roller Mills	Decatur	Adams	100	50	12,500

*Estimated

TABLE X.—List of Indiana Flour Mills and their Capacities (continued)

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Fort Branch Milling Co.	Fort Branch	Gibson	100	40	8,000
Fortville Mill Co.	Fortville	Hancock	40	15	3,000
Fourteen Mile Valley Mills	Lexington R. R.	Scott	50	30	2,000
Fowler & Floyd	Harrodsburg	Monroe	40	15	3,000
Fredericksburg Mill Co., The	Fredericksburg	Washington	30	12	3,000
Freelandville Flouring Mills Co.	Freelandville	Knox	50	22	4,400
Freeport Roller Mills	Freeport	Shelby	50	15	800
Freetown Mill Co.	Freetown	Jackson	50	15	2,350
Fremont Flouring Mills	Fremont	Steuken	50	30	3,000
Friedrich & Son, C. W.	Dyer	Lake	50	30	3,000
Friendship Milling Co.	Friendship	Ripley	60	26	4,000
Fritch, J. D.	Frankfort	Clinton	150	25	5,000
Frye, Joseph	Middletown R. R.	Henry	50	25	3,750
Fuhrer-Ford Milling Co.	Mt. Vernon	Posey	450	225	50,000
Fyke Milling Co.	LaGrange	LaGrange	50	30	5,000
Gale Milling Co., Wm.	Cumberland	Marion	100	—	3,000
Gandy & Co., O.	South Whitley	Whitley	40	13	3,000
Garland Milling Co.	Greensburg	Decatur	400	300	85,308
Garrett & Funk	Liberty Center	Wells	40	10	600
Gehman, A.	Lewis	Vigo	—	—	—
Gentryville Milling Co.	Gentryville	Spencer	40	30	2,500
Geneva Milling & Grain Co.	Guevara	Adams	50	12	3,150
Gilman, S. B.	Summitville	Madison	50	25	3,750
Globe Mills, The	Fort Wayne	Allen	40	15	2,000
Goshen Milling Co.	Goshen	Elkhart	700	450	135,000
Gosport Roller Mills	Gosport	Owen	25	8	1,000
Graston, G. W.	Dupont	Jefferson	50	16	1,500
Graft Bros.	Winchester	Randolph	75	30	7,500
Greenfield Mills	Orland R. R.	LaGrange	25	10	500
Grim, Loyd	Springport	Henry	40	30	2,000
Grimes Milling Co.	Leavenworth	Crawford	72	25	7,000
Gross, L. J.	Sandborn	Knox	50	17	2,000
Guyatt & Son, Wm.	Knox	Starke	50	30	2,500
Hall Milling Co., W. C.	Brazil	Clay	155	60	11,000
Hampton, W. D.	Worthington	Greene	50	18	2,700
Hanover Mills	Hanover	Jefferson	50	25	1,300
Hanson Bros.	La Otto	Noble	40	10	*1,000
Hanson, Robt.	Michigan City	LaPorte	35	10	500
Hardinsburg Milling Co.	Hardinsburg	Washington	45	15	2,000
Hardin & Son	Ladoga	Montgomery	40	30	3,000
Harris, J. C.	Montgomery	Davies	75	20	2,500
Harris Milling Co.	Greencastle	Putnam	100	35	7,000
Hartford City Grain & Milling Co.	Hartford City	Blackford	100	50	5,000
Harvest City Mills	Edinburg R. R. 23	Johnson	40	15	* 500
Hawes, J. J.	Memphis	Clark	50	25	1,300
Hawk Bros. Milling Co.	Mingo	LaGrange	*40	*15	*1,000
Hay, Henry	Churubusco	Whitley	30	15	1,000
Haynes Milling Co.	Portland	Jay	125	30	22,000
Haysville Milling Co.	Haysville	Dubois	25	30	3,000
Hazleton Milling Co.	Hazleton	Gibson	50	25	5,000
Heaton & Co., E. H.	Indianapolis	Marion	40	10	1,000
Heckman, Chas. H.	Decatur	Adams	50	25	3,750
Helmsath, John	Napoleon	Ripley	50	—	500
Heise Bros. & Co.	Orleans	Orange	70	35	5,000
Heise Milling Co.	Madison	Jefferson	60	30	6,000
Hendricks & Sons	Tanger	Parke	24	10	580
Hering & Co., J.	Shelbyville R. R.	Shelby	25	10	1,500
Hibblits Mill Co.	Muncie	Delaware	200	80	10,400
High Street Milling Co.	Muncie	Delaware	150	50	7,500
Hillands & Co., R. P.	Rainbridge	Putnam	60	25	1,350
Hildebrand, E. L.	Elizabeth	Harrison	50	25	1,500
Holland Mills, The	Holland	Dubois	70	30	5,000
Hollingsworth, S. P.	Russellville	Howard	35	10	3,000
Holton Milling Co.	Holton	Ripley	20	12	2,500
Home Mill & Grain Co.	Mt. Vernon	Posey	500	275	97,350
Hornung, J. M.	Greensburg	Decatur	50	20	3,000
Houck & Knox	Converse	Miami	40	15	1,500
Hubbard & Co., W. H.	Monrovia	Morgan	75	25	3,750
Huber & Schultz	Poland	Clay	40	15	2,000
Hunsicker & Bender	Bluffton	Wells	75	30	6,000
Huntington Mill Co.	Huntington	Huntington	100	75	30,000
Igleheart Bros.	Evansville	Vanderburg	800	400	150,000
Imperial Mills, The	Cambridge City	Wayne	75	30	6,000

*Estimated

TABLE X.—List of Indiana Flour Mills and their Capacities (continued)

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Indiana Milling Co.	Terre Haute	Vigo	150	75	22,000
Inglesfield Milling Co.	Inglesfield	Vanderburg	50	25	4,000
Jacobson, Soren	Young America	Cass	50	20	2,600
Jay Grain Co.	Mulberry	Clinton	80	35	8,000
Jessup, Nevins & Co.	Bloomingsdale	Parke	70	30	6,000
Jones & Long	Wabash	Wabash	50	25	8,750
Jordon & Gossard	Kempton	Tipton	50	20	2,500
Kamman, Frank W.	Cross Plains	Ripley	50	25	7,500
Karnes, Lubert	Martinsburg	Washington	25	10	1,000
Katterjohn, A. F.	Lynnville	Warrick	50	20	*4,000
Katterjohn, Q. F.	Boonville	Warrick	50	20	3,000
Keesler Milling Co.	St. Joe	DeKalb	50	20	4,000
Kellman, Kimmert Co.	Lowell	Lake	80	35	7,000
Kennedy & Co., L. C.	Center Point	Clay	50	20	3,750
Kennedy Milling Co., G. W.	Shelbyville	Shelby	150	100	30,000
Kent Milling Co.	Kent	Jefferson	50	25	2,000
Keplinger, Chas.	Zanesville	Wells	40	15	4,350
Kern & Son, A. J.	Trinity Springs	Martin	25	12	900
Kidwell & Goode	Elwood	Madison	60	30	5,000
Kiewit & Frederick	Harrison, Ohio		100	40	8,000
Kimble & Son, H. C.	Brookville	Franklin	100	50	5,000
Kincade, Jas. W.	St. Joe R. R.	DeKalb	40	15	4,000
Kingman Grain & Milling Co.	Kingman	Parke	40	15	3,750
Kirklin Grain Co.	Kirklin	Clinton	65	20	8,000
Klemm, Geo. J.	Attica	Fountain	125	50	10,000
Klondike Milling Co.	Danville	Hendricks	75	35	7,000
Knoblock & Ginz Milling Co.	South Bend	St. Joseph	120	30	7,500
Koontz, Samuel	Walkerton R. R. 3	St. Joseph	75		500
Kriwitz Bros.	Kendallville	Noble	50	20	3,000
Krome & Co., H.	Batesville	Ripley	75	35	7,500
LaFayette Milling Co.	LaFayette	Tiptecanoe	100	35	10,500
LaPorte Milling Co.	LaPorte	LaPorte	200	60	6,000
Lash Flour Mills, Fred B.	Farmersburg	Sullivan	50	25	5,000
Laubscher, W. F.	Evansville R. R. 6	Vanderburg	25	12	1,200
Lawrenceburg Roller Mills Co.	Lawrenceburg	Dearborn	1,800	1,650	235,000
Leesburg Grain & Milling Co.	Leesburg	Kosciusko	75	30	6,000
Lemon, C. M.	Bedford	Lawrence	125	50	*10,000
Lewis Milling Co.	Lewis	Vigo	80	10	2,000
Ligonier Milling Co.	Ligonier	Noble	500	250	62,104
Lindauer, Ferd.	Fulda	Spencer	25	12	1,500
Lindsey, A.	Marion R. R. 4	Grant	30	15	1,500
Lirgeman, Adams & Co.	Brownsville	Hendricks	50	25	6,000
Linton Milling Co.	Linton	Greene	125	45	1,100
Little Crow Milling Co.	Warsaw	Kosciusko	50	20	6,000
Livonia Flouring Mills	Livonia	Washington	40	15	1,500
Long, John C.	Chesterton R. R.	Porter	30	10	500
Loogootee Milling Co.	Loogootee	Martin	80	40	7,500
Loughry Bros. Milling & Grain Co.	Monticello	White	500	500	145,000
Lynn Mill & Elevator Co.	Lynn	Randolph	50	20	8,000
Lyons Mill	Lyons	Greene	40	20	1,000
Lyons Mill & Elevator Co.	Lyons	Greene	50	20	1,000
Macy Milling Co.	Macy	Miami	50	20	8,000
Manja, Chas.	Kingsbury	LaPorte	40	10	500
Marengo Milling Co.	Marengo	Crawford	50	20	8,000
Markland Roller Mills	Markland	Switzerland	50	25	2,500
Markle, O. H.	Salina	Clay	25	10	* 500
Martin, Martin & Co.	New Castle	Henry	100	50	9,000
Martinsville Milling Co.	Martinsville	Morgan	60	25	6,000
Matthew Milling Co.	Mitchell	Lawrence	75	25	3,750
Matthews Roller Mills	Matthews	Grant	40	15	1,300
Maxville Roller Mill	Farmland	Randolph	25	10	1,000
Mayflower Mills	Port Wayne	Allen	300	200	90,000
Means & Witt	Lebanon	Boone	75	30	7,500
Medaryville Milling Co.	Medaryville	Pnaski	30	15	3,050
Medora Milling Co.	Medora	Jackson	30	25	5,000
Melrose Mill Co.	Evansville	Vanderburg	40	15	600
Metamora Roller Mills	Metamora	Franklin	40	20	2,000
Mexico Milling Co.	Mexico	Miami	25	10	1,250
Meyers, Jacob	Chili	Miami	25	12	8,500
Middlebury Milling Co.	Middlebury	Elkhart	50	25	8,000
Millark Mills	Rochester R. R. 2	Fulton	25	10	500
Millgrove Mills	Devore	Owen	*25	*10	*1,000

*Estimated

TABLE X.—List of Indiana Flour Mills and their Capacities (continued)

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Millhousen Milling Co.	Millhousen	Decatur	50	15	3,000
Milltown Milling Co.	Milltown	Crawford	75	30	3,000
Monroe Grain, Hay & Milling Co.	Monroe	Adams	30	15	2,750
Montpeller Milling Co.	Montpeller	Blackford	75	30	9,000
Morgantown Milling Co.	Morgantown	Morgan	50	30	3,000
Morgantown Milling Co.	Mahalsville	Morgan	40	10	2,000
Morning Star Mill	Somerville	Gibson	50	35	2,750
Moscow Roller Mills	Moscow R. R. No. 16, Milroy	Rush	50	30	1,500
Moss Island Roller Mills	Anderson R. R. 5	Madison	35	18	1,500
Moutoux Bros.	Evansville	Vanderburg	75	30	4,500
Moyer, W. H.	Cory	Clay	50	30	4,000
Muller & Sons, Peter	Ferdinand	Dubois	150	50	10,000
Murray Bros.	Spencerville	DeKalb	40	15	1,500
Myers & Bro., T. C.	Epsom	Daviess	50	10	800
McCann Roller Mill	Connersville	Fayette	100	40	1,200
McCoy Bros.	Liberty	Union	100	50	10,000
McCoy & Co., H. W.	Lake	Spencer	35	10	1,500
McDonald, Geo. A.	Nashville	Brown	40	15	1,500
McMurtry & Walther	Marshall	Parke	75	35	3,500
McNely, Thos. N.	Walkerton	St. Joseph	25	10	1,000
Nading, Simon	Hope	Bartholomew	75	30	4,500
Neill & Van Valer	Jonesboro	Grant	50	35	2,750
Nesbit & Co., I. A.	Sullivan	Sullivan	100	—	6,000
Newberry Milling Co.	Newberry	Greene	60	30	1,000
New Carlisle Milling Co.	New Carlisle	St. Joseph	40	30	1,000
New & Cook	Zionsville	Boone	50	30	3,000
New Marion Milling Co.	New Marion	Ripley	40	18	2,500
New Milling Co.	Greenfield	Hancock	125	50	7,500
Nicum Milling Co.	Swayzee	Grant	50	30	4,000
Nieman, C.	Sunman	Ripley	80	40	3,000
Nipp, John	Rushville R. R. 10	Rush	25	15	800
Noblesville Milling Co.	Noblesville	Hamilton	1,300	600	180,000
Nodine, W. J.	Jamestown	Steuben	35	18	2,000
North Manchester Milling Co.	N. Manchester	Wabash	60	30	3,000
Nugent, Thomas	Jamestown	Boone	50	35	6,000
Oakland City Roller Mills	Oakland City	Gibson	75	35	4,500
Oaktown Flouring Mill Co.	Oaktown	Knox	50	30	2,250
Odon Milling Co.	Odon	Daviess	60	35	7,800
Oldenburg Flour Mills	Oldenburg	Franklin	60	30	3,000
Orangeville Flouring Mill	Orleans R. R. 2	Orange	40	10	3,000
Organ Spring Mill	Salem R. R. 6	Washington	30	10	800
Otwell Mill Co., The	Otwell	Pike	75	34	2,500
Owensville Milling Co.	Owensville	Gibson	100	50	4,500
Pancost Milling Co.	Elkhart	Elkhart	75	30	3,500
Paoli Milling Co.	Paoli	Orange	80	35	11,000
Paragon Roller Mills	Alblon	Noble	75	37	4,000
Paragon Roller Mills	Paragon	Morgan	25	8	1,000
Parker City Mills	Parker	Randolph	50	20	2,000
Pendleton Milling Co.	Pendleton	Madison	100	30	1,500
Pennville Milling Co.	Pennville	Jay	30	13	1,300
Peoples' Flouring Mill, The	Ashley	Steuben	50	30	3,000
Persing, Abraham	Wolf Lake	Noble	40	10	1,000
Peru Milling Co.	Peru	Miami	200	60	20,000
Petersburg Milling & Grain Co.	Petersburg	Pike	75	30	6,000
Phoenix Flour Mill	Evansville	Vanderburg	550	275	90,514
Plainfield Milling Co.	Plainfield	Hendricks	50	35	5,000
Poseyville Milling Co.	Poseyville	Posey	75	35	3,500
Frang, F.	Indianapolis	Marion	80	40	10,000
Preasel, S. J.	Hagerstown	Wayne	45	17	2,400
Princeton Milling Co.	Princeton	Gibson	400	300	60,000
Props Milling Co.	LaGro	Wabash	50	10	3,000
Pyrmont Milling Co.	Pyrmont	Carroll	50	35	6,350
Quebbeman & Temple	Ramsey R. R. 1	Harriett	20	8	800
Quickel, R. G.	Hagerstown	Wayne	35	10	500
Ray & Rice	Camden	Carroll	50	20	4,000
Redden & Sons, Wm.	New Paris	Elkhart	60	4	300
Redington & Morgan	Rolling Prairie	LaPorte	50	20	4,500
Red Mill, The	Fairland R. R.	Shelby	35	20	3,000
Richland Milling Co.	Bloomfield	Greene	50	35	5,500
Richmond Roller Mills	Richmond	Wayne	250	135	37,000
Ridgeville Roller Mills & Elevator	Ridgeville	Randolph	50	30	3,000
Riedel & Gray	Ossian	Wells	60	15	2,500

*Estimated

TABLE X.—List of Indiana Flour Mills and their Capacities (continued)

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Ripple Milling Co., The	Mishawaka	St. Joseph	100	35	3,500
Rittenhouse, B. S.	Liberty Mills	Wabash	50	35	5,000
River Queen Mills	Rensselaer	Jasper	50	25	2,500
Riverside Mills	Wolcottville	LaGrange	40	30	1,000
Rosch & Rothenberger	Delphi	Carroll	50	30	5,000
Robison, Harriett K.	Brewersville	Jennings	—	—	1,500
Rochester Roller Mills	Rochester	Fulton	50	10	* 500
Rockport Milling Co.	Rockport	Spencer	200	95	27,000
Roeske Bros.	Michigan City	LaPorte	50	30	3,000
Rohm Bros.	Rockville	Parke	75	65	2,000
Rohm Bros. & Co.	Mansfield	Parke	40	20	5,000
Rose Milling Co.	Alfordsville	Davless	50	20	2,000
Ruoff, Geo. D.	Osgood	Ripley	60	30	5,000
Sahn, Adam	Lawrenceville	Dearborn	40	15	1,000
Salem Farmers Milling Co.	Salem	Washington	30	10	3,000
Salem Milling Co.	Salem	Washington	50	49	11,000
Sanderson, R. N.	Orland	Steuben	50	30	3,000
Schaefer & Schwartzkopf	Columbus	Bartholomew	100	40	12,000
Schalk Bros.	Anderson	Madison	180	60	12,000
Schilt, W. F.	Bremen	Marshall	50	26	* 4,000
Schnell, J. H.	Birdseye	Dubois	50	25	2,750
Schnellville Milling Co.	Schnellville	Dubois	75	35	3,500
Scholl & Tieteman	Weisburg	Dearborn	50	20	2,000
Schulenburg & Donseiman	Dillsboro	Dearborn	38	15	3,500
Schultz & Sons	Elberfeld	Warrick	30	40	3,000
Schuppert, M.	Depauw	Harrison	50	30	2,000
Scott, L. H.	Willmot	Noble	25	10	500
Scottsburg Milling Co.	Scottsburg	Scott	60	30	5,500
Semon, F. T.	Vernon	Jennings	50	15	2,500
Seward & Rakestraw	Oakford	Howard	75	25	2,500
Sheridan Milling Co.	Sheridan	Hamilton	50	20	2,000
Shetterly Bros.	Lapel	Madison	35	18	2,700
Silver Star Milling Co.	Patrickburg	Owen	60	30	6,000
Sims Grain Co., J. T.	Frankfort	Clinton	150	45	12,000
Sloan, J. F.	Palestine, Burket P. O.	Kosciusko	50	15	1,500
Smeltz, I. Anson	Ontario	LaGrange	35	15	1,000
Smith, A.	Sheridan	Hamilton	60	25	3,000
Smith, A. S.	Flint	Steuben	30	15	1,000
Smith, D. R.	Tipton	Tipton	65	30	6,000
Smith, Elmer E.	Knightstown	Henry	30	20	2,000
Smith Grain & Milling Co.	Warsaw	Kosciusko	40	20	5,000
Smith, L. W.	Kokomo	Howard	25	5	1,500
Smith, Roper & Co.	Hobart	Lake	50	40	4,000
Smith, Wm.	Versailles	Ripley	60	30	3,000
Smock & Caca	Noblesville	Hamilton	40	20	6,000
Snoddy, Wm.	Covington R. R.	Fountain	30	15	2,000
Snyder, Chas. A.	Waynetown	Montgomery	30	25	4,000
South Side Cereal Mills	Fort Wayne	Allen	40	15	1,500
South Whitley Mills	South Whitley	Whitley	75	25	2,500
Sparks Milling Co.	Terre Haute	Vigo	500	—	35,000
Spencer & Co., J. W.	Veedersburg	Fountain	50	20	2,000
Spencer Milling Co.	Spencer	Owen	130	50	7,500
Spink Milling Co.	Washington	Davless	100	65	20,000
Spring Mill	Paoli R. R. &	Orange	30	10	* 1,000
Stampers Creek Mill	Paoli R. R.	Orange	50	20	2,000
St. Anthony Milling Co.	St. Anthony	Dubois	60	25	4,500
Star Mill Co.	Huntingburg	Dubois	60	30	4,500
Star Mills	Mentone	Kosciusko	50	20	5,000
Star Milling Co.	Shoals	Martin	30	25	5,000
Star Milling Co.	Aurora	Dearborn	75	25	7,000
Star Roller Mills	Burlington	Carroll	50	20	5,000
Steinhilber & Ross Milling Co.	Hartford City	Blackford	50	25	3,750
Steinhall & Velceine Milling Co.	Oriole	Perry	25	17	2,500
Stonehead Roller Mills	Columbus R. R.	Brown	40	15	1,500
Stone Quarry Mills	Spiceland	Henry	30	10	1,000
Stoudt, Thomas	South Bend	St. Joseph	75	25	4,000
Street Mill Co., J.	LaPorte	LaPorte	70	30	3,000
Studebaker Mills	Farmland R. R. No. 12	Randolph	25	10	500
Suckow, Wm.	Franklin	Johnson	400	—	25,000
Sullivan Mill & Elevator Co.	Sullivan	Sullivan	100	50	2,500

*Estimated

TABLE X.—List of Indiana Flour Mills and their Capacities (continued)

NAME	Address	County	Capacity barrels	Daily output barrels	Yearly output barrels
Summit Mills	Summitville	Madison	80	17½	1,260
Sunlight Milling Co.	Mt. Vernon	Posey	800	150	98,000
Switz City Milling Co.	Switz City	Greene	75	80	4,500
Tapp & Bridwell	Bloomington	Monroe	80	80	7,000
Taylor-Hitz Co.	Madison	Jefferson	125	80	10,000
Taylor, John H.	Ogilville	Bartholomew	40	15	2,000
Tell City Flouring Mills	Tell City	Perry	150	80	25,000
Thomas, A. R.	Markle	Huntington	50	40	12,000
Thompson, Joseph	Prairie Creek	Vigo	50	15	2,200
Thornburg Milling Co.	Martinsville	Owen	90	44	6,500
Thornstown Milling Co.	Thornstown	Boone	75	80	7,500
Thurgood, Geo. R.	Vincennes	Knox	60	80	2,000
Thurston, B. F.	Darlington	Montgomery	25	12	2,000
Tobrocke, Henry	Waymansville	Bartholomew	25	12	1,200
Topeka Milling Co.	Topeka	LaGrange	25	19½	1,200
Tresselt & Sons, C.	Fort Wayne	Allen	250	100	25,000
Trow Company, W.	Madison	Jefferson	800	400	90,000
Truitt & Son, Wm. F.	East Enterprise	Switzerland	50	20	4,000
Tunnelton Milling Co.	Tunnelton	Lawrence	25	10	600
Tuttle & Co., R.	Columbia City	Whitley	800	400	90,000
Uhl & Company, Dennis	Logansport	Cass	200	120	20,000
Uhl & Snider	Connersville	Fayette	100	50	12,000
Ulrey, A. A.	Fairmount	Grant	60	80	5,000
Ulrick & Son, Levi	Greensboro	Henry	25	12	2,400
Union City Milling Co.	Union City	Randolph	50	80	2,500
Up-to-Date Roller Mills	St. Paul	Shelby	40	15	1,200
Van Camp Milling Co.	Decatur	Adams	50	20	
Vessely & Borkovec	North Judson	Starke	30	5	750
Vevay Flour Mill	Vevay	Switzerland	50	25	2,500
Victoria Milling Co.	Jasper	Dubois	100	50	7,500
Viers & Wicks	Rochester	Fulton	60	20	2,000
Volland Milling Co.	Fort Wayne	Allen	60	20	5,000
Wabash Milling Co.	Wabash	Wabash	100	40	6,000
Wakarusa Milling Co.	Wakarusa	Elkhart	40	15	2,200
Walker & Co., Peter M.	Loogootee	Martin	75	20	*5,500
Walker & Norris	Washington	Dayless	100	80	10,500
Wallace Milling Co.	Dale	Spencer	90	60	15,000
Walton & Whisler	Atlanta	Hamilton	100	80	12,000
Waltz & Co., J. W.	New Palestine	Hancock	35	10	1,500
Wanatch Roller Mills	Wanathb	LaPorte	40	20	*2,000
Waterloo Mills	Waterloo	DeKalb	50	25	5,000
Watson Milling Co.	Corydon	Harrison	100	25	5,000
Weber, Robert	Patoka	Gibson	75	10	200
Wellington & Son	Anderson	Madison	100	50	12,500
West Baden Milling Co.	West Baden	Orange	50	20	4,500
West Middleton Mill & Elevator Co.	West Middleton	Howard	50	20	2,000
Westphalia Mill & Elevator Co.	Westphalia	Knox	50	20	2,000
Wheeler, A. L.	Mooreville	Morgan	75	25	7,000
Whisler H. F.	Reserve	Miami	25	10	500
White Bros	LaPorte	LaPorte	20	10	500
Wildcat Roller Mills	Cutler	Carroll	25	10	1,000
Wilkinson & Co., T. B.	Knightstown	Henry	15	12	2,000
Williams Milling Co.	Williams	Lawrence	50	25	2,000
Williamsport Milling Co.	Williamsport	Warren	150	60	9,000
Wilson & Greene	Darlington	Montgomery	25	10	1,000
Wingard & Rapp	Syracuse	Kosciusko	50	10	1,000
Winslow Milling Co.	Winslow	Pike	75	30	7,200
Wisman Milling Co., M. E.	Angola	Steuben	75	25	1,200
Witmer Grain Co.	Grabill	Allen	50	25	6,000
Workman, A. L.	Edinburg R. R. 28	Johnson	40	15	*1,000
Worsham & Miller	Pakerton	Kosciusko	25	10	200
Wright Milling Co.	Paris Crossing	Jennings	100	40	12,000
Yohn & Strombeck	North Webster	Kosciusko	50	25	5,000
Youngs Creek Milling Co.	Youngs Creek	Orange	40	15	1,500
Zabel & Son	Lanesville	Harrison	80	30	4,000
Zehner, S. V.	Monterey	Pulaski	25	10	500
Zehner Milling Co.	Plymouth	Marshall	60	15	2,500
Zillak & Schafer Milling Co.	Haubstadt	Gibson	800	150	37,500

*Estimated

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Agricultural Experiment Station

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MAY, 1910

STEER FEEDING

V

FINISHING STEERS

1907, 1908 and 1909

Part I. Dry Lot vs. Pasture for Finishing Yearlings

Part II. Finishing Two Year Old Steers

Part III. "Short Fed" Cattle at 1908 International

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FINISHING STEERS

1907, 1908 and 1909

J. H. SKINNER

W. A. COCHEL¹

SUMMARY

PART I

1. Calves, given a full feed of grain from November to May, will make more rapid and cheaper gains, attain a higher finish, sell at a higher price and return a greater profit if continued in dry lot than if turned on pasture for finishing.

2. Full fed calves when turned on grass, shrink in weight during the first 10 days and require from two to three weeks to regain their original weight.

3. Steers in dry lot consume a greater amount of concentrates than similar cattle on pasture.

PART II

4. Cattle, fed on well balanced rations throughout the feeding period make more expensive and less rapid gains during the finishing period.

5. A nitrogenous supplement added during the finishing period, to a ration deficient in protein, increases the rate and decreases the cost of gains.

6. During the springs and summers of 1907, 1908 and 1909, an additional profit to that secured in regular feeding experiments, resulted from carrying steers to a higher degree of finish.

PART III

7. The "Short Fed" cattle exhibited by Purdue Experiment Station at the International, 1908, made more rapid gains, cheaper gains and sold at a higher price per hundred than any other cattle entered in the "Short Fed Special" contest.

¹Associate in Animal Husbandry—Resigned December 1, 1909

PART I

DRY LOT VS. PASTURE FOR FINISHING YEARLINGS

The feeder, who in the fall of the year buys calves with a view to finishing them for market in such condition that they will sell as prime yearlings, should realize that he is entering into a feeding proposition that will require from nine to 12 months for its completion. In order to make the greatest financial success from the venture, he should select calves showing pronounced beef type, quality, early maturity, large capacity for feed and the "milk fat" which has been secured by having suckled the dam until placed in the feed lot. The calves should, if possible, be taught to eat grain before weaning in order that there may be no loss in weight or condition when required to depend entirely upon themselves for sustenance. These two factors are only under the control of the man who finishes calves of his own raising and who should logically follow the production of yearling beef in the corn belt. For him who makes a business of feeding cattle rather than producing them, the western ranges must furnish the material for the feed lot, which means that the calves will necessarily have lost much of the "bloom" carried at weaning time and also be entirely unaccustomed to the feeds used for production of beef in the corn belt, both of which will result in a longer feeding period where prime yearling beef is produced.

When calves are first placed in the feed lot they should be given the most palatable feed that can be obtained until they have learned to eat. Most excellent results in starting them can be secured from a grain mixture of shelled corn, bran and oats mixed in equal proportions by weight, adding one part of linseed meal to 10 parts of the grain mixture. For roughage, good, bright clover or alfalfa hay and corn silage are most useful. After they have learned to eat grain, the expensive feeds such as bran and oats may be dropped from the ration and the more concentrated feeds such as corn, cotton-seed or linseed meal increased according to appetite, and fed in connection with good roughage during the winter. This method of treatment will result in an increase of approximately two pounds per head daily for six months as shown in bulletins No. 129 and No. 136. When high grade calves are given a full feed during this period on such rations, they will sell from 25 cents to 50 cents per hundred below the prices paid for fat cattle of equal quality and type on the central markets and will require from three to four months of full feeding to make them prime. At this time there

is usually an abundance of grass, flies are annoying, the hot weather of the summer months is approaching, and the demands for labor in seeding, cultivating and harvesting crops are urgent. These conditions would seem to make it advisable to turn the half-fat yearlings on grass rather than keep them in the dry lots for finishing, but the work reported in the following pages shows a decided advantage in favor of dry-lot feeding. In order to test the advisability of using these methods of finishing yearlings, the Station has divided the calves used in the winter feeding experiments reported in bulletins No. 129 and No. 136 into two lots at the close of the age experiments, turning one on grass and keeping the other in dry lot, continuing the full feed of grain for three months in each lot.

METHOD OF EXPERIMENTATION

The quarters used for dry-lot feeding were the same as used in the experiments reported in previous bulletins. They were not well adapted to summer feeding as the sheds were too low to be kept reasonably cool, too narrow to furnish protection from the sun and could not be darkened so as to keep out flies. The quarters used for pasture consisted each year of nine acres of mixed timothy and clover pasture which furnished more grass than the cattle could consume from the middle of May to the middle of August. There was a double row of catalpa trees running along the west side of the pasture which furnished protection from the sun; otherwise, the cattle on pasture had no shelter.

CATTLE USED

During the first and second tests high grade Hereford steers were used which had been given a full feed of shelled corn, cottonseed meal, clover hay and corn silage during the winter feeding season from November 15 to May 15. In the third test high grade Angus steers which had been given a full feed of shelled corn, cottonseed meal and clover hay during the winter season, were used. Under this method of treatment the cattle entered the summer feeding experiments in such a condition that they would have sold as half-fat yearlings, being too fleshy to be considered as feeders. They were divided into two lots as nearly equal as possible in age, weight, type, quality and condition with due consideration of their rate of gain during the preceding winter.

WEIGHING AND FEEDING

The average weight of each steer for three days at the close of the winter feeding was used as the initial weight for summer feeding. They were weighed in lots at 10:00 a. m. at the end of each 10 day period, individually at the end of each 30 day period and for three consecutive days at the beginning and the close of the experiment. Shelled corn and cotton-seed meal were used as a grain ration in both lots during each of the three experiments, fed twice daily in such quantities as would be cleaned up readily in one-half to three-quarters of an hour. The pasture cattle grazed at will, where they had an abundance of grass throughout each of the three years. The dry-lot cattle were fed mixed clover and timothy hay the first year, corn silage and clover hay for the first month of the second year, after which the silage was discontinued on account of not having a sufficient number of cattle on feed to keep it from spoiling during the hot weather, and clover hay the third year. Roughage was fed in the dry lot in such quantities that it would be cleaned up without waste. Water was supplied each lot from the town water supply in galvanized iron tanks, which were cleaned out at frequent intervals. Salt was supplied once each week in limited quantities.

VALUATION

The cattle were valued at the close of the winter feeding experiments on a basis of their actual worth on the Chicago and Indianapolis markets by members of the firms of Alexander, Ward and Conover, Chicago, and Valodin, Parr, Moffitt and Co., of Indianapolis. These values were used as the initial values in the summer feeding experiments. At the close of the summer feeding they were sold on the Chicago market as one lot, after having both buyers and salesmen estimate the difference between those fed in dry lot and pasture. At the time the steers were divided into two lots they were apparently consuming the same amount of feed.

TABLE I.—Showing Average Amount of Feed Consumed per Head Daily During a Finishing Period of 90 Days

Ration 90 days	Summer—1907				Summer—1908				Summer—1909							
	Dry lot		Pasture		Dry lot		Pasture		Dry lot		Pasture					
	Shelled corn	Cotton- seed meal	Hay	Shelled corn	Cotton- seed meal	Shelled corn	Cotton- seed meal	Hay	Silage	Shelled corn	Cotton- seed meal	Shelled corn	Cotton- seed meal	Hay	Shelled corn	Cotton- seed meal
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1st 10 days	12.90	2.00	5.00	6.90	1.32	12.75	1.80	2.30	10.00	9.00	1.27	14.00	2.00	5.00	12.60	1.90
2nd 10 days	13.50	2.00	5.00	7.65	1.33	13.65	1.80	2.50	10.00	8.35	1.16	14.55	2.00	5.00	12.80	2.00
3rd 10 days	14.45	2.18	5.00	9.20	1.48	14.00	1.80	2.50	10.00	11.00	1.27	15.00	2.00	5.00	13.00	2.00
4th 10 days	15.00	2.20	5.00	10.50	1.60	14.40	1.80	5.00		12.60	1.66	15.00	2.00	5.00	13.00	2.00
5th 10 days	15.60	2.15	5.00	11.10	1.50	15.05	2.00	5.00		13.95	1.87	14.50	2.00	5.00	14.20	2.00
6th 10 days	15.65	2.14	5.00	12.30	1.55	16.00	2.00	5.00		16.00	2.00	14.65	2.00	5.00	15.00	2.00
7th 10 days	15.88	2.14	5.00	12.50	1.60	14.90	1.90	5.00		15.90	1.90	15.00	2.00	5.00	15.00	2.00
8th 10 days	16.00	2.40	5.00	13.05	1.80	13.80	1.80	5.00		13.75	1.80	15.00	2.00	5.00	14.94	2.00
9th 10 days	15.10	2.16	4.87	9.60 ²	1.62	14.15	2.00	5.00		14.80	2.00	15.00	2.00	5.00	15.00	2.00
90 days average	14.89	2.15	4.98	10.31	1.53	14.30	1.87	4.14	10.00	12.81	1.65	14.74	2.00	5.00	13.94	1.98

¹Summer 1908 dry lot: first month average roughage 2.43 lbs. hay, 10 lbs. silage; second and third months average roughage 5 lbs. hay

²The marked decrease of the amount of grain consumed by the pasture cattle during the last 10 day period was due to changing from old pasture to new clover field

A study of Table I will show that during each of the three years the cattle remaining in the dry lot continued to consume a maximum amount of grain while those turned on grass in each instance consumed from three to six pounds less per head than they were accustomed to at the close of the winter feeding experiment. There was not a very material increase in the amount consumed in dry lot in later periods but in the pasture the increase was quite rapid until about the close of the experiment when the steers on pasture were again consuming practically the same as those in the dry lot. In the second test during the last period they were consuming more. This is the first noticeable difference between the two methods of feeding, and shows that yearling steers which have been given a full feed of grain during the winter months will, if turned on grass about the middle of May, lose their appetite for grain when first turned out, not regaining it until they have been on pasture from 40 to 50 days. A detailed study of bulletins No. 129 and No. 136 will show that the steers, when divided into two lots on May 20, 1907, were consuming 12 pounds of shelled corn, 1.9 pounds cotton-seed meal, 2.25 pounds clover hay and 10 pounds corn silage per head daily; during the next 10 day period, the dry-lot steers consumed 12.9 pounds shelled corn, 2 pounds cotton-seed meal and 5 pounds hay and the pasture steers 6.9 pounds shelled corn, 1.32 pounds cotton-seed meal. The following year when divided into two lots on May 15, 1908, they were consuming 11.5 pounds shelled corn, 1.7 pounds cotton-seed meal, 2.25 pounds clover hay and 10 pounds corn silage per head daily; during the next 10 day period, the dry-lot steers consumed 12.75 pounds shelled corn 1.8 pounds cotton-seed meal, 2.3 pounds clover hay and 10 pounds corn silage, and the pasture steers, 9 pounds shelled corn and 1.27 pounds cotton-seed meal. The third year, when divided into two lots on May 17, 1909, they were consuming 13.5 pounds shelled corn, 2 pounds cotton-seed meal and 5 pounds clover hay per head daily; during the next 10 day period, the dry-lot steers consumed 14 pounds shelled corn, 2 pounds cotton-seed meal and 5 pounds clover hay, and the pasture steers, 12.6 pounds shelled corn and 1.9 pounds cotton-seed meal. The results of three years work with yearling steers which have had a full feed of grain during the preceding winter, show conclusively, that when they are kept in the dry lot they will not only consume their regular full feed during the latter half of May, but will also show a normal increase in grain consumption. If turned on pasture they lose their appetite for grain to some extent and depend upon green succulent grass which is more palatable to them. It should be understood that these results were secured with steers which had received a full feed of both grain and roughage

from the time they were weaned in the fall of the year until the middle of May, when there was in each instance an abundance of succulent pasture. If they had been turned out earlier in the season before grass had started there would not have been the marked decrease in the consumption of grain, or if they had been fed on a light grain ration during the preceding winter, so that they would have gone on grass in stocker or feeder condition, their appetite for grain would probably have been just as great as that of cattle kept in the dry lot. Table I shows that there was a gradual increase in the amount of grain consumed by the dry-lot cattle throughout the 90 days they were on feed. In the first test the pasture steers, though given access to all the grain they would eat, never consumed as much as those in the dry lot. During the second and third tests the steers on pasture during the last three 10 day periods consumed as much as those in the dry lot.

TABLE II.—Showing Total Feed Consumed by Yearlings During a Finishing Period of 90 Days

	Summer—1907				Summer—1908				Summer—1909			
	Dry lot (10 steers)		Pasture (10 steers)		Dry lot (10 steers)		Pasture (10 steers)		Dry lot (10 steers)		Pasture (10 steers)	
	Shelled corn	Cotton- seed meal	Hay	Shelled corn	Shelled corn	Cotton- seed meal	Silage	Shelled corn	Shelled corn	Cotton- seed meal	Hay	Shelled corn
1st month	lbs. 4085	lbs. 618	lbs. 1500	lbs. 2375	lbs. 413	lbs. 1bs. 4040	lbs. 540	lbs. 730	lbs. 3000	lbs. 2835	lbs. 370	lbs. 4355
2nd month	4625	649	1500	3390	465	4545	580	1500		4255	553	4415
3rd month	4698	670	1487	3515	502	4285	570	1500		4445	570	4500
Total	13408	1937	4487	9280	1380	12870	1690	3730	3000	11535	1493	13270
										1800	4500	12554
												1799

Table II shows the total amount of grain consumed by 30 steers fed in dry lot, in lots of 10 each during three years, was 39,548 pounds shelled corn and 5427 pounds cotton-seed meal, while an equal number of cattle fed on pasture, during the same period consumed 33,369 pounds shelled corn and 4663 pounds cotton-seed meal, amounting to an average per steer daily of 2.29 pounds shelled corn and .28 pound cotton-seed meal in favor of dry-lot feeding. This difference accounts in a large measure for the more rapid gain and higher finish obtained by dry-lot in comparison with pasture feeding as shown in the following pages. It is impossible to show in tabular form the difference in the amount of roughage consumed by cattle on pasture and in dry lot. Close observation of the different lots of steers, indicated that those on pasture were consuming a greater amount than those in dry lot. Table II is valuable in that it shows the amount of feed consumed by yearlings which were made prime during the last three months of the feeding period.

TABLE III.—Showing Average Daily Gain per Head by Yearlings in Dry Lot and on Pasture During a Finishing Period of 90 Days

	Summer—1907		Summer—1908		Summer—1909	
	Dry lot	Pasture	Dry lot	Pasture	Dry lot	Pasture
1st month	2.06 lbs.	.66 lb.	2.16 lbs.	1.61 lbs.	2.37 lbs.	1.34 lbs.
2nd month	1.90 "	2.05 lbs.	1.58 "	1.41 "	1.35 "	1.66 "
3rd month	1.01 "	1.00 lb.	1.38 "	1.56 "	1.35 "	1.38 "
90 days	1.65 lbs.	1.24 lbs.	1.71 lbs.	1.53 lbs.	1.69 lbs.	1.46 lbs.

Table III shows the average daily gains made by yearlings during three years. In studying this table it should be remembered that these cattle had received a full feed of grain during the preceding winter and were too fat to be classed as feeders when the summer feeding experiments started. They were also carried to a very high degree of finish, as shown by the fact that in each of the three years they were fat enough at the close of the experiment to sell for the top price for yearlings on the Chicago market. All of these factors have a tendency to reduce the rate and increase the cost of gain where other conditions remain constant.

TABLE IV.—Showing Weight and Gain of Yearlings in Finishing Period

Summer—1907					
Dry lot (10 steers)			Pasture (10 steers)		
	Weight	Gain		Weight	Gain
Initial	8796 lbs.		Initial	8800 lbs.	
End 1st mo.	9415 "	619 lbs.	End 1st mo.	9000 "	200 lbs.
" 2nd "	9985 "	570 "	" 2nd "	9615 "	615 "
" 3rd "	10288 "	303 "	" 3rd "	9916 "	301 "
Total		1492 lbs.	Total		1116 lbs.

Summer—1908					
Dry lot (10 steers)			Pasture (10 steers)		
	Weight	Gain		Weight	Gain
Initial	8701 lbs.		Initial	8751 lbs.	
End 1st mo.	9350 "	649 lbs.	End 1st mo.	9235 "	484 lbs.
" 2nd "	9825 "	475 "	" 2nd "	9660 "	425 "
" 3rd "	10240 "	415 "	" 3rd "	10130 "	470 "
Total		1539 lbs.	Total		1379 lbs.

Summer—1909					
Dry lot (10 steers)			Pasture (10 steers)		
	Weight	Gain		Weight	Gain
Initial	8273 lbs.		Initial	8088 lbs.	
End 1st mo.	8985 "	712 lbs.	End 1st mo.	8490 "	402 lbs.
" 2nd "	9390 "	405 "	" 2nd "	8990 "	500 "
" 3rd "	9796 "	406 "	" 3rd "	9406 "	416 "
Total		1523 lbs.	Total		1318 lbs.

Total for Three Years					
Dry lot (30 steers)			Pasture (30 steers)		
	Weight	Gain		Weight	Gain
Initial	25770 lbs.		Initial	25639 lbs.	
End 1st mo.	27750 "	1980 lbs.	End 1st mo.	26725 "	1086 lbs.
" 2nd "	29200 "	1450 "	" 2nd "	28265 "	1540 "
" 3rd "	30324 "	1124 "	" 3rd "	29452 "	1187 "
Total		4554 lbs.	Total		3813 lbs.

Table IV shows that in each test the dry-lot cattle made the greatest gain during the first month after which there was a decline in the two succeeding months, due no doubt, to their becoming fatter and to the condition of the weather. In the pasture the smallest gains were made during the first month, due to the change from dry lot to pasture and the marked decrease in the amount of grain consumed as shown in Table I. A careful study of three years results as presented in Table IV, shows that the steers in dry lot made a gain of 894 pounds in excess of those on pasture during the first month of summer feeding. During the second month the difference was 90 pounds and during the third month, 63 pounds in favor of the steers on pasture. This would tend to show that the superiority of the dry-lot method of feeding was entirely due to the behavior of the steers during the first month, after which the pasture was superior. The results of three months feeding show a difference of 741 pounds gain in favor of the dry-lot cattle during the three years which was sufficient to overcome all of the other advantages of pasture feeding when considered in connection with the added "bloom" and higher market price of the dry lot at the time of marketing.

If it were possible to turn out early in the season before grass had started, continuing the feeds used in dry lot so that the steers would become accustomed to the grass very gradually, then there would apparently be little advantage in dry-lot feeding in the summer except that due to the premium paid for dry-fed cattle on the central markets, caused by the general belief that the carcasses from dry-fed cattle are superior to those from grass-fed cattle.

TABLE V.—Showing Average Amount of Feed Consumed per 100 Pounds Gain by Yearlings
During the Finishing Period of 90 Days

Ration	Summer—1907						Summer—1908						Summer—1909					
	Dry lot (10 steers)			Pasture (10 steers)			Dry lot (10 steers)			Pasture (10 steers)			Dry lot (10 steers)			Pasture (10 steers)		
	Shelled corn	Cotton- seed meal	Hay	Shelled corn	Cotton- seed meal		Shelled corn	Cotton- seed meal	Hay	Silage	Shelled corn	Cotton- seed meal	Shelled corn	Cotton- seed meal	Hay	Shelled corn	Cotton- seed meal	
1st mo.	lbs. 659.93	99.83	242.32	lbs. 1187.50	206.5	lbs. 622.49	83.20	112.48	462.24	lbs. 585.74	76.44	lbs. 611.65	84.26	210.67	lbs. 955.22	146.76		
2nd mo.	811.40	113.85	263.15	551.21	75.6	956.84	122.10	315.78		1001.17	130.11	1090.12	148.14	370.37	844.00	120.00		
3rd mo.	1550.49	221.12	490.75	1167.77	166.77	1032.53	137.34	361.44		945.74	121.27	1108.37	147.78	369.45	1080.28	144.23		
Total	898.45	129.82	300.73	831.54	123.65	836.25	109.81	242.36	194.98	836.47	108.26	871.30	118.18	295.46	952.50	135.81		

A study of Table V shows that the amount of grain required to produce 100 pounds gain increased as the feeding period progressed both in the dry lot and on the pasture. This was also true in winter feeding as shown in bulletins Nos. 115, 129, 130 and 136 and justifies the conclusion that the longer the feeding period and the higher the finish secured, the greater will be the cost of gains if no change is made in the rations. In comparing the amount of concentrates consumed in producing gains from the two methods of feeding, it will be observed that the pasture steers had a slight advantage in two and the dry-lot cattle in one out of the three tests. The difference, however, is so small that it may be safely concluded that the amount of concentrates required to produce a pound of gain in finishing yearlings is practically the same, whether they are fed in dry lot or on pasture.

TABLE VI.—Showing Cost of Gains in Finishing Yearlings in Summer

	Dry lot	Pasture
1907	\$11.34 per cwt.	\$11.17 per cwt.
1908	12.70 " "	12.85 " "
1909	13.24 " "	14.66 " "
Average	\$12.43 per cwt.	\$12.98 per cwt.

Based upon the following prices:—

Shelled corn.....@	50 cents per bushel in 1907
Shelled corn.....@	65 " " " 1908-9
Cotton-seed meal.....@	\$28.00 per ton
Hay.....@	\$10.00 " "
Corn silage.....@	\$ 2.50 " "
Pasture.....@	75 cents per head per month

Table VI shows that the cost of gains both in dry lot and in pasture during the three summers (1907, 1908 and 1909) was very high. This was due to three facts; the steers had been on full feed for six months before the summer feeding started, they were carried to a very high degree of finish and the prevailing market price of feeds was greater than during any other three consecutive years in a long time. The cost of gains as shown in this table was based upon the actual market value of corn and other feeds at the time of feeding. In comparing these figures with those shown in bulletins No. 129 and No. 136 it will be seen that the gains in finishing were much more expensive than those made during the first six months of feeding and were even greater than those secured with yearlings and two-year-olds during that time. This shows that the condition of the cattle has a much greater influence than their age over the cost of gains.

TABLE VII.—Showing Influence of Price of Corn upon Cost of Gains in Finishing Yearlings

	Cost of gains per cwt. ¹	
	Dry lot	Pasture
	1907	
with corn @ 40c. per bu.	\$ 9.73	\$ 9.68
“ “ @ 45c. “ “	10.53	10.42
“ “ @ 50c. “ “	11.34	11.16
“ “ @ 55c. “ “	12.14	11.90
“ “ @ 60c. “ “	12.94	12.64
“ “ @ 65c. “ “	13.74	13.38
“ “ @ 70c. “ “	14.54	14.12

	Cost of gains per cwt. ¹	
	Dry lot	Pasture
	1908	
with corn @ 40c. per bu.	\$ 8.96	\$ 9.12
“ “ @ 45c. “ “	9.71	9.87
“ “ @ 50c. “ “	10.45	10.61
“ “ @ 55c. “ “	11.20	11.36
“ “ @ 60c. “ “	11.95	12.10
“ “ @ 65c. “ “	12.69	12.85
“ “ @ 70c. “ “	13.44	13.59

	Cost of gains per cwt. ¹	
	Dry lot	Pasture
	1909	
with corn @ 40c. per bu.	\$ 9.35	\$10.41
“ “ @ 45c. “ “	10.13	11.26
“ “ @ 50c. “ “	10.91	12.11
“ “ @ 55c. “ “	11.68	12.96
“ “ @ 60c. “ “	12.46	13.81
“ “ @ 65c. “ “	13.24	14.66
“ “ @ 70c. “ “	14.02	15.51

	Cost of gains per cwt. ¹	
	Dry lot	Pasture
	Three years	
with corn @ 40c. per bu.	\$ 9.34	\$ 9.73
“ “ @ 45c. “ “	10.12	10.51
“ “ @ 50c. “ “	10.89	11.29
“ “ @ 55c. “ “	11.67	12.07
“ “ @ 60c. “ “	12.45	12.85
“ “ @ 65c. “ “	13.22	13.63
“ “ @ 70c. “ “	14.00	14.41

¹Based upon the following prices:—

Cotton-seed meal....@	\$28.00	per ton
Hay.....@	\$10.00	“ “
Silage.....@	\$ 2.50	“ “
Pasture.....@	75 cents	per head per month

In Table VII a sliding scale of prices for corn, varying from 40 cents to 70 cents per bushel, was used in order that the cost of gains might be applied to market conditions differing from those prevailing during the time the experiment was in progress. A study of this table shows that an increase of 10 cents in the price of a bushel of corn increased the cost of gains approximately \$1.55 per hundred; that the cost of gains in pasture has been slightly in excess of that in the dry lot.

TABLE VIII.—Showing Necessary Selling Price for Yearlings Worth from \$5.00 to \$6.50 at the Beginning of the Finishing Period when Fed in Dry Lot or Pasture with Corn at Varying Prices During a Finishing Period of 90 Days

Cost per cwt.	Selling Price ¹	
	Dry lot	Pasture
	Corn @ 40c. per bushel	
\$5.00	\$5.65	\$5.61
5.50	6.07	6.04
6.00	6.50	6.48
6.50	6.92	6.91
	Corn @ 50c. per bushel	
\$5.00	\$5.88	\$5.81
5.50	6.31	6.24
6.00	6.73	6.68
6.50	7.16	7.11
	Corn @ 60c. per bushel	
\$5.00	\$6.11	\$6.01
5.50	6.54	6.44
6.00	6.96	6.88
6.50	7.39	7.31
	Corn @ 70c. per bushel	
\$5.00	\$6.35	\$6.21
5.50	6.77	6.65
6.00	7.20	7.08
6.50	7.62	7.52

¹Based upon the following prices:—

Cotton-seed meal...	@ \$28.00	per ton
Clover hay.....	@ \$ 8.00	" "
Corn silage.....	@ \$ 2.50	" "
Pasture.....	⊙	75 cents per head per month

Table VIII shows that a greater margin is necessary in feeding in dry lot, although, the cost of gain is less, due to the more rapid gains made by the dry-lot cattle. An increase of 10 cents per bushel in the price of corn requires a corresponding increase, 23 to 24 cents in the selling price of the dry lot and 20 to 21 cents in the lot on pasture. An increase of 50 cents per hundred in the initial value of the steers as they went into the finishing period necessitated a corresponding increase of 42 to 43 cents in the selling price at the close of the experiment in order to insure an equal profit.

FINANCIAL STATEMENTS

In presenting the financial statements for the yearlings finished in dry lot and on pasture, the feeds have been charged at the prevailing market price at the time of feeding. As the cattle had been used in the winter feeding experiments and were divided equally for finishing in summer, the final prices in the winter experiments with calves, reported in bulletins No. 129 and No. 136 have been used as initial values for yearlings. The dry-lot and pasture cattle were shipped each year to the Union Stock Yards, Chicago, and sold by Alexander, Ward and Conover, as one lot. Before delivery, however, they were separated into two lots, as fed in the summer, which were inspected by buyers, sellers and commission men who determined the difference in value between the two lots. The final values determined in this way were used after making allowance for the cost of shrinkage, feed, yardage, commission and freight from the Station feed lots to market.

Although hogs were used in each lot to consume the undigested corn in the droppings from cattle, no credit has been allowed in the financial statements for pork produced, because of the impracticability of determining what proportion of gain on hogs following cattle on pasture was due to the waste in cattle feeding and to the additional feed secured by the hogs from grass. It may be assumed, however, that there was sufficient grain left undigested to produce at least two pounds of pork from each bushel of corn fed to the cattle, which would increase the profits from feeding very materially. There would be a further profit in each lot from the manure produced during a three months period of full feeding which is not estimated in the financial statements. No allowance has been made for the labor in feeding as the price of feeds includes the cost of marketing which under average conditions would be equal to that of feeding.

It will be seen that the total expenditures for feeding the dry-lot cattle were greater than for those on pasture each year, due to the larger consumption of grain in dry lot, and that the total value of the dry-lot cattle when marketed was also greater, due to their greater weight and higher finish. The difference in selling value in favor of the dry-lot cattle at the close of three months feeding was 20 cents per hundred in 1907 and 1908 and 10 cents in 1909. A study of the financial statements will show that there was a profit in feeding all lots during each of the three years except in the case of the pasture cattle in 1909 where there was a loss of \$1.48 per head from the three months feeding. This, however, is more than balanced by the gains made by hogs following.

From the summary of three years work it will be seen that the average price of corn fed was 60 cents per bushel, the average selling price of the cattle \$7.14 per hundred if finished in the dry lot, and \$6.97 per hundred if finished on pasture; that the total profit from dry-lot feeding based upon the cattle alone without considering hogs or manure was almost two and one-half times as great as from feeding on pasture, and that the corn fed to the dry-lot cattle brought 7.2 cents per bushel, while that fed to the pasture cattle brought 3.4 cents per bushel over its market value at the time of feeding.

It should be remembered in considering the profits from feeding during the past three years that unusual conditions have been confronted. Half to three-fourths fat yearlings were in strong demand and selling out of proportion to finished cattle when the experiment started in each of the three years. The price of corn was exceptionally high during the same period, and at no time were the cattle marketed when values were at the high point of the year. While the net profits as shown in the financial statements are not large, they are satisfactory in view of the conditions confronted and show that there was a profit in finishing yearlings under adverse conditions during the three summers (1907, 1908 and 1909) in addition to a very material profit from winter feeding.

From the three years work it would be safe to conclude that high grade calves showing beef type, early maturity, quality and capacity for feed can be profitably finished as prime yearlings if given full feed during a nine months period; that dry-lot feeding is superior to pasture feeding in finishing yearlings, as shown by the rate of gain, cost of gain, finish secured, profit per steer, price received per bushel for corn, and interest on the investment.

FINANCIAL STATEMENTS

Dry lot—1907

May 15	To 10 steers, weight 8796 lbs.	@ \$5.35 per cwt.	\$470.58
"	239.4 bus. shelled corn	@ .50 per bu.	119.70
"	1937 lbs. cotton-seed meal	@ 1.40 per cwt.	27.11
"	4487 lbs. mixed hay	@ .50 per cwt.	22.43

Total expenditures \$639.82

Aug. 15 By 10 steers, weight 10,288 lbs. @ \$6.55 per cwt. 673.86

Total profit \$ 34.04

Profit per steer 3.40

Price received per bushel for corn .642

Interest on investment for three months in cattle and feed 5.3%

Pasture—1907

May 15	To 10 steers, weight 8800 lbs.	@ \$5.35 per cwt.	\$470.80
"	165.7 bus. shelled corn	@ .50 per bu.	82.85
"	1380 lbs. cotton-seed meal	@ 1.40 per cwt.	19.32
"	pasture 10 steers 3 months	@ .75 per head per month	22.50

Total expenditures \$595.47

Aug. 15 By 10 steers, weight 9916 lbs. @ \$6.35 per cwt. 629.66

Total profit \$ 34.19

Profit per steer 3.42

Price received per bushel for corn .706

Interest on investment for three months in cattle and feed 5.7%

Dry lot—1908

May 15	To 10 steers, weight 8701 lbs.	@ \$6.30 per cwt.	\$548.16
"	229.82 bus. shelled corn	@ .65 per bu.	149.38
"	1690 lbs. cotton-seed meal	@ 1.40 per cwt.	23.66
"	3730 lbs. mixed hay	@ .50 per cwt.	18.65
"	3000 lbs. silage	@ .125 per cwt.	3.75

Total expenditures \$743.60

Aug. 15 By 10 steers, weight 10,240 lbs. @ \$7.40 per cwt. 757.76

Total profit \$ 14.16

Profit per steer 1.41

Price received per bushel for corn .711

Interest on investment for three months in cattle and feed 1.9%

FINANCIAL STATEMENTS (continued)

Pasture—1908

May 15	To 10 steers, weight 8751 lbs.	@ \$6.30 per cwt.	\$551.31
"	205.98 bus. shelled corn	@ .65 per bu.	133.88
"	1493 lbs. cotton-seed meal	@ 1.40 per cwt.	20.90
"	pasture 10 steers for 3 months	@ .75 per head per month	22.50

Total expenditures \$728.59

Aug. 15 By 10 steers, weight 10,130 lbs. @ \$7.20 per cwt. 729.36

Total profit \$.77

Profit per steer .07

Price received per bushel for corn .653

Interest on investment for three months in cattle and feed .1%

Dry lot—1909

May 15	To 10 steers, weight 8273 lbs.	@ \$6.40 per cwt.	\$529.47
"	236.96 bus. shelled corn	@ .65 per bu.	154.02
"	1800 lbs. cotton-seed meal	@ 1.40 per cwt.	25.20
"	4500 lbs. mixed hay	@ .50 per cwt.	22.50

Total expenditures \$731.19

Aug. 15 By 10 steers, weight 9796 lbs. @ \$7.50 per cwt. 734.70

Total profit \$ 3.51

Profit per steer .35

Price received per bushel for corn .664

Interest on investment for three months in cattle and feed .4%

Pasture—1909

May 15	To 10 steers, weight 8088 lbs.	@ \$6.40 per cwt.	\$517.63
"	224.17 bus. shelled corn	@ .65 per bu.	145.71
"	1790 lbs. cotton-seed meal	@ 1.40 per cwt.	25.06
"	pasture 10 steers 3 months	@ .75 per head per month	22.50

Total expenditures \$710.90

Aug. 15 By 10 steers, weight 9406 lbs. @ \$7.40 per cwt. 696.04

Total loss \$ 14.86

Loss per steer 1.48

Price received per bushel for corn .533

Loss on investment for three months in cattle and feed .2%

FINANCIAL RESULTS OF THREE YEARS WORK IN FINISHING YEARLINGS ON DRY LOT VS. PASTURE

Dry lot			
May 15	To 30 steers, weight 25,770 lbs.	@ \$6.00+ per cwt.	\$1548.21
"	706.18 bus. shelled corn	@ .599+ per bu.	423.10
"	5427 lbs. cotton-seed meal	@ 1.40 per cwt.	75.97
"	12,717 lbs. mixed hay	@ .50 per cwt.	63.58
"	3000 lbs. corn silage	@ .125 per cwt.	3.75
Total expenditures			\$2114.61
Aug. 15	By 30 steers, weight 30,324 lbs.	@ \$7.14+ per cwt.	2166.32
Total profit			\$ 51.71
Profit per steer			1.72
Price received per bushel for corn			.672
Interest on investment for three months in cattle and feed			2.4%
Pasture			
May 15	To 30 steers, weight 25,639 lbs.	@ \$6.00+ per cwt.	\$1539.74
"	595.85 bus. shelled corn	@ .608+ per bu.	362.44
"	4663 lbs. cotton-seed meal	@ 1.40 per cwt.	65.28
"	pasture 30 steers 3 months	@ .75 per head per month	67.50
Total expenditures			\$2034.96
Aug. 15	By 30 steers, weight 29,452 lbs.	@ \$6.97+ per cwt.	2055.06
Total profit			\$ 20.10
Profit per steer			.67
Price received per bushel for corn			.642
Interest on investment for three months in cattle and feed			.98%

PART II

FINISHING TWO YEAR OLD STEERS

The degree of finish to which a steer is carried should be governed by the quality and type of the steer, the season of the year, the cost of gains and the condition of the market for finished cattle. It is not always profitable to make cattle fat enough to sell at top prices especially if they are of poor type and deficient in quality but when high grade steers are being fed on rations that insure economical gains there is usually an additional profit secured from making them prime over marketing them in half-fat condition.

During the winter 1906-7 the Station fed one lot of cattle on shelled corn, cotton-seed meal, clover hay and corn silage, a similar lot on shelled corn, clover hay and corn silage, both of which are reported in bulletin No. 129. When they had been in the feed lots for four months, another lot, which had been fed shelled corn, clover hay, corn stover and oat straw during the same length of time, was purchased from a feeder and given a ration of shelled corn, cotton-seed meal, clover hay and corn silage.

TABLE IX.—Finishing Steers March 21 to May 20, 1907

Previous Record and Treatment (4 months)

	Age	Ration	Initial weight	Final weight	Gain daily per steer
Lot 1	2 yrs.	Shelled corn Cotton-seed meal Clover hay Corn silage	10108	13505	2.83
Lot 4	2 yrs.	Shelled corn Clover hay Corn silage	10175	12540	1.97
Lot 8	2 yrs.	Shelled corn Clover hay Shredded stover Oat straw	10026	12126	1.75

Record During Finishing Period (2 months)

Lot 1	2 yrs.	Shelled corn Cotton-seed meal Clover hay Corn silage	13505	14745	2.06
Lot 4	2 yrs.	Shelled corn Clover hay Corn silage	12540	13481	1.56
Lot 8	2 yrs.	Shelled corn Cotton-seed meal Clover hay Corn silage	12126	13965	3.06

Table IX shows that Lot 1 which was fed a good ration made a much more rapid gain than either Lot 4 or Lot 8 during the first four months of feeding. In the finishing period Lots 1 and 4 were continued on the same ration as they had received at the Station during the first four months, Lot 8 was changed from a poor ration to the same as given Lot 1. This change resulted in Lot 8 making a more rapid gain than either of the other two lots during the finishing period.

Considering the whole period together, Table IX shows that the most rapid gain was made by Lot 1 followed by Lot 8 and Lot 4 in the order named. This indicates that the slow gains made by Lot 8 during the first four months of feeding were due to the character of the ration rather than the individuality of the cattle. The table also shows that Lot 1 not only made more rapid gains than Lot 4 during the first four months of feeding but also during the last two months, which indicates that a well selected ration will continue to result in more rapid gains than a poor one until the cattle are finished. A comparison of the rate of gain in Lots 1, 4 and 8 will show that unless there is an improvement in the ration during the close of a feeding period the rate of gain will be less than during the earlier stages of fattening. There are at least three factors controlling the rate of gain made in the feed lot during the finishing period:

1. Previous method of feeding
2. Condition of cattle
3. Kind of ration used

all of which must be considered when the finishing period begins.

TABLE X.—Showing Results Secured in Finishing Steers, Spring of 1907. Length of Feeding Period 60 Days

RATION	Lot 1	Lot 4	Lot 8
	Shelled corn, cotton-seed meal, clover hay, corn silage	Shelled corn, clover hay, corn silage	Shelled corn, cotton-seed meal, clover hay, corn silage
Number of steers	10	10	10
Initial value	\$742.77	\$658.35	\$636.61
Initial weight	13505 lbs.	12540 lbs.	12126 lbs.
Final weight	14745 "	13481 "	13965 "
Total gain	1240 "	941 "	1839 "
Av. daily gain per steer	2.06 "	1.56 "	3.06 "
Total feed consumed			
Shelled corn	10565 "	11749 "	10382 "
Cotton-seed meal	2026 "		1731 "
Clover hay	1995 "	1965 "	1940 "
Corn silage	6000 "	6000 "	6000 "
Av. feed consumed daily per steer			
Shelled corn	17.6 "	19.58 "	17.3 "
Cotton-seed meal	3.37 "		2.88 "
Clover hay	3.32 "	3.27 "	3.23 "
Corn silage	10.00 "	10.00 "	10.00 "
Feed consumed per pound gain			
Shelled corn	8.52 "	12.48 "	5.64 "
Cotton-seed meal	1.63 "		.94 "
Clover hay	1.60 "	2.08 "	1.05 "
Corn silage	4.83 "	6.37 "	3.26 "
Cost of gain per cwt.			
Corn @ 40c. per bu.	\$ 9.60	\$10.55	\$ 6.18
" @ 50c. " "	11.13	12.77	7.18
Profit per steer			
Corn @ 40c. per bu.	2.26	.40	5.97
" @ 50c. " "	.38	1.69 ¹	4.11
Necessary margin in feeding	.34	.37	.12
Actual margin secured	.50	.40	.55

¹Loss

Table X shows that the cost of gain in Lot 1 was less than in Lot 4 where a poorer ration was being used continuously for six months but that it was greater during the finishing period than in Lot 8 where the ration was improved. This is due to the fact that Lot 1 was in a much higher condition than Lot 8 when the finishing period started, hence consumed less feed in proportion to their weight and made less rapid gain. The results of this trial would indicate that it is advisable to feed a good ration throughout the whole feeding period, but if this is not possible good results can be secured from improving the ration toward the close of the feeding period.

During the winter of 1906-7 three lots of cattle were fed at the Station as follows: Lot 4 shelled corn, clover hay and silage, Lot 5 shelled corn and clover hay and Lot 6 shelled corn and timothy hay. When the winter feeding experiment closed all three lots were fed for one month a ration of shelled corn, cotton-seed meal and clover hay. A detailed description of the cattle and method of feeding is given in bulletin No. 129.

TABLE XI.—Finishing Steers

Treatment Before Finishing Period—Spring, 1907

No. of lot	Age of cattle	Ration fed	Length of feeding period	Daily gain	Cost of gain	Average weight of cattle	Value per cwt.	Date of close of preceding experiment
4	2 yrs.	Shelled corn Clover hay Corn silage	6 mos.	lbs. 1.85	\$8.27	lbs. 1348	\$5.30	May 20
5	2 yrs.	Shelled corn Clover hay	6 mos.	2.01	8.56	1373	5.45	May 20
6	2 yrs.	Shelled corn Timothy hay	6 mos.	1.56	9.27	1281	5.20	May 20

Finishing Period—Summer, 1907

No. of lot	Age of cattle	Ration fed	Length of finishing period	Daily gain	Cost of gain	Necessary selling price to prevent loss	Necessary margin for finishing	Actual selling price	Actual margin
4	2 yrs.	Shelled corn Cotton-seed meal Clover hay	1 mo.	lbs. 2.55	\$7.79	\$5.43	\$.13	\$6.25	\$.95
5	2 yrs.	Shelled corn Cotton-seed meal Clover hay	1 mo.	2.79	7.66	5.57	.12	6.40	.95
6	2 yrs.	Shelled corn Cotton-seed meal Clover hay	1 mo.	2.30	8.62	5.37	.17	6.05	.85

Based upon the following prices:—

Shelled corn@ 40 cents per bushel
 Cotton-seed meal.....@ \$28.00 per ton
 Clover hay@ \$ 8.00 per ton

Table XI shows that the change in rations increased the rate of gain .7 pound per head daily, in Lot 4; .78 pound in Lot 5; and .74 pound over that secured from the preceding six months feeding in Lot 6. The cost of gains was decreased 50 cents in Lot 4, 90 cents in Lot 5, and 65 cents per hundred pounds in Lot 6. The necessary increase in value per hundred pounds in order to justify the change in rations and continue the feeding period one month longer was 13 cents in Lot 4, 12 cents in Lot 5, and 17 cents in Lot 6, while the actual improvement was 95 cents per hundred in Lots 4 and 5, and 85 cents in Lot 6. There was a general increase in cattle values of 75 cents per hundred pounds which was in no way due to the change in rations.

A similar test was conducted the following year with four lots of cattle after five months feeding which was reported in bulletin No. 129. Lot 1 had been fed on shelled corn, cotton-seed meal, clover hay and corn silage, Lot 4 on shelled corn and clover hay, Lot 5 on shelled corn, cotton-seed meal and clover hay and Lot 6 on shelled corn, clover hay and corn silage. The only change made in these rations was to add cotton-seed meal to the rations used in Lots 4 and 6.

TABLE XII.—Finishing Steers

Treatment Before Finishing Period—Summer, 1908

No. of lot	Age of cattle	Ration fed	Length of feeding period	Daily gain	Cost of gain	Average weight of cattle	Value per cwt.	Date of close of preceding experiment
1	2 yrs.	Shelled corn Cotton-seed meal Clover hay Corn silage	5 mos.	lbs. 2.70	\$9.09	lbs. 1528	\$6.25	April 15
4	2 yrs.	Shelled corn Clover hay	5 mos.	1.81	11.42	1407	5.95	April 15
5	2 yrs.	Shelled corn Cotton-seed meal Clover hay	5 mos.	2.58	9.73	1521	6.30	April 15
6	2 yrs.	Shelled corn Clover hay Corn silage	5 mos.	1.74	11.47	1392	6.00	April 15

Finishing Period—Summer, 1908

No. of lot	Age of cattle	Ration fed	Length of finishing period	Daily gain	Cost of gain	Necessary selling price to prevent loss	Necessary margin for finishing	Actual selling price	Actual margin
1	2 yrs.	Shelled corn Cotton-seed meal Clover hay Corn silage	1 mo.	lbs. 2.55	\$9.30	\$6.39	\$.14	\$6.75	\$.50
4	2 yrs.	Shelled corn Cotton-seed meal Clover hay	1 mo.	1.48	17.24	6.30	.35	6.35	.40
5	2 yrs.	Shelled corn Cotton-seed meal Clover hay	1 mo.	1.40	17.09	6.59	.29	6.70	.40
6	2 yrs.	Shelled corn Cotton-seed meal Clover hay Corn silage	1 mo.	3.36	7.46	6.10	.10	6.40	.40

Based upon the following prices:—

Corn	50 cents per bushel
Cotton-seed meal	\$28.00 per ton
Clover hay	\$ 8.00 per ton
Corn silage	\$ 2.50 per ton

Table XII shows that when the steers were continued on the same rations there was a decrease in the rate and an increase in the cost of gains due to the higher condition of the cattle. Lot 4 which had previously been fed on shelled corn and clover hay failed to show any improvement during the next month from the addition of cotton-seed meal to the ration. This, however, was due to one of the steers in this lot being off feed and to the extremely muddy condition of the lot in which they were fed. For these reasons the results from feeding this lot should not be considered as based upon average conditions. The results, however, are reported in order that the feeder may appreciate the influence which unfavorable conditions may have in determining the results of an experiment. Lot 6 gave results similar to those secured in previous work which justifies the statement that when conditions are normal, an improvement in the ration during the final stages of fattening results in a more rapid and a cheaper gain than where the use of the same ration is continued.

During the winter 1908-9 one lot of cattle, Lot 6, was fed on shelled corn and clover hay for six months, the results of which were reported in bulletin No. 136. After the close of the experiment this lot, not being finished, was retained in the feed lots for one month, a change being made in the ration by the addition of cotton-seed meal. During the six months feeding period they had made an average daily gain of 1.89 pounds per head from the use of 10.15 pounds shelled corn and 5.23 pounds clover hay at a cost of \$12.35 per hundred. During the finishing period of one month, the same results were secured as in previous years from improving the ration in increasing the rate of gain from 1.89 pounds to 2.90 pounds per head daily and decreasing the cost of gains from \$12.35 to \$10.83 per hundred. At the close of the winter feeding experiment they were valued at \$6.55 per hundred. The last months feeding required a margin of 23 cents per hundred to insure an equal profit, while the actual margin secured was 30 cents or a profit of seven cents per hundred without giving credit for the manure or pork produced.

The results of all trials conducted at the Station during the months of May and June, 1907, 1908 and 1909 have shown that the final month in finishing steers of good quality and breeding has added an additional profit to that secured during the winter feeding season. This has been exceptionally large where the cattle were not on the most efficient rations during the winter and which were improved during the finishing period by the use of nitrogenous concentrates.

PART III**THE SHORT-FED CATTLE AT THE INTERNATIONAL, 1908**

On August 1, 1908, the Experiment Station put in a load of high grade Angus yearlings that had not received grain during the preceding winter or summer, averaging in weight at that time 737 pounds per head. They were used to secure additional data in regard to short feeding cattle during the late summer and early fall months and were shown at the International Live Stock Exposition held in Chicago in December, 1908, in competition with cattle entered in the short-fed contest by practical feeders in different sections of the country. The object of this work was to compare the results of cattle feeding at the Experiment Station with those secured by practical feeders who have had long years of experience in the business and have been sufficiently successful to enter into the International contest. The cattle were shipped to the University farm during the latter part of July and were started, on August 1, on a ration which consisted of four pounds shelled corn, one pound cotton-seed meal and 20 pounds corn silage. Owing to the severe and prolonged drought which was prevalent over the state of Indiana during the fall of 1908, it was impossible to secure pasture for these cattle, hence it was decided to feed them on silage in connection with their grain ration. At the end of the first 10 day period they were consuming 11 pounds shelled corn and two pounds cotton-seed meal per head. This was increased gradually. At the end of the first month they were consuming 13.5 pounds shelled corn, 3.5 pounds cotton-seed meal and 25 pounds corn silage per head daily. By the end of the second month they were consuming 14.5 pounds shelled corn, four pounds cotton-seed meal and 28 pounds corn silage. The maximum amount of grain was fed during the third month which amounted to 16 pounds shelled corn and four pounds cotton-seed meal per head. Silage was gradually reduced during the same period so that they consumed 20 pounds per head daily. In order to prepare them for shipment and to overcome the tendency toward paunchiness the cattle were beginning to show, the silage was taken out of the ration two weeks before shipment, clover hay being supplied in its place during the remainder of the period. On the day before shipment corn was reduced, cotton-seed meal omitted entirely and in its place the same quantity of oats was fed. On the day of shipment the amount of oats was increased to five pounds per head and the corn decreased to six pounds per head. They were watered the evening before shipment and shipped to Chicago on November 27, where they were entered in the International Short-fed Contest.

TABLE XIII.—Showing Rate and Cost of Gains, Selling Price, Dressing Percentage and Prizes Won by Each Lot of Cattle Exhibited in the "Short-fed" Contest at the International Live Stock Exposition Held in Chicago, December, 1908

	Crabb two-year-olds	Henderson two-year-olds	Purdue yearlings
Feed consumed	18 head 784 bus. corn, 2000 lbs. cotton- seed meal, 8000 lbs. clover hay, pasture, 6 acres, 1000 lbs. Acme feed	15 head 560 bus. corn, 750 lbs. molasses, 20,000 lbs. alfalfa hay	18 head 513 bus. corn, 7221 lbs. cotton- seed meal, 180 lbs. oats, 180 lbs. corn silage, 2020 lbs. clover hay
Value of feeds	\$750.00—18 head \$24.99—15 head	\$529.37—15 head	\$586.74—18 head 488.95—15 head
Gain (15 steers)	4146 lbs.	4200 lbs.	5377.5 lbs.
Cost per hundred pounds gain	\$15.07	\$12.60	\$9.09
Selling price (15 steers)	\$ 7.10	\$ 7.20	\$7.70
Dressing per cent. (15 steers)	59.86	59.9	59.01
Prizes won	1st in class, \$100; Rosenbaum spe- cial, \$100; Ingwersen spec- ial, \$100 Cham- pion silver cup	2nd prize in class, \$50	1st prize in class, \$100

¹Based upon the following prices:—

Corn@ 75 cents per bushel
Cotton-seed meal @ \$28.00 per ton
Hay@ \$10.00 per ton
Corn silage.....@ \$ 4.00 per ton
Stock feeds and molasses feeds and pasture at prices prevalent
at the time they were used

The accompanying table gives the result of the different lots of short-fed cattle exhibited at the show. The statement varies slightly from that presented by the various feeders owing to the fact that the prices used for feeds were variable. In making up the table an uniform price of feeds has been used in order that the comparison may be made as nearly accurate as possible. There were two lots of two year old cattle exhibited and one of yearlings. It will be noticed in studying this table that the 15 head of yearlings fed at the Station made a gain of 5377.5 pounds as compared with 4146 pounds and 4200 pounds by the two year old cattle fed by practical feeders. This would amount to 80 pounds per steer during the four months feeding period in favor of the methods used at the Station. The cost in producing 100 pounds gain is presented in connection with the rate of gain to show that the Station cattle made their gains at a cost of \$5.98 per hundred less than the Crabb two-year-olds and \$3.51 less than the Henderson two year old cattle. The cattle were sold at public auction on the same market and an interesting comparison is there shown, where the Purdue yearlings sold at \$7.70 per hundred or 50 cents per hundred higher than the Henderson two-year-olds and 60 cents higher than the Crabb two-year-olds. The dressing percentage in the various lots was quite uniform, varying from 59.01 per cent. up to 59.9 per cent. First prize was awarded to the Crabb two-year-olds in the two year old class and to the Purdue yearlings in the yearling class. When it came to awarding the championship it was given to the Crabb two-year-olds in spite of the fact that the Station cattle had made 1231.5 pounds greater gain at a cost of \$5.98 per hundred less and that they were considered to be worth 60 cents per hundred more than the championship cattle on foot when bought by the same party. This would seem to indicate that the award was based entirely upon the probable dressing percentage of the cattle without any consideration of the rate or cost of gains or of the quality of the beef.

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PURDUE UNIVERSITY
Agricultural Experiment Station

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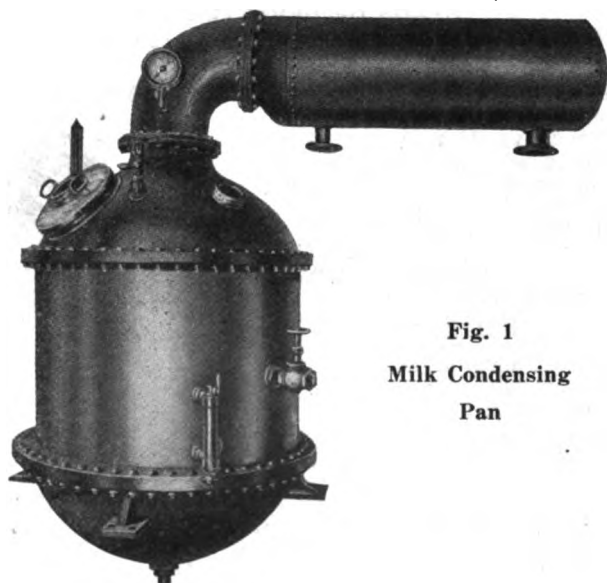


Fig. 1
Milk Condensing
Pan

**STANDARDS FOR EVAPORATED MILK, SWEETENED
CONDENSED MILK AND CONDENSED SKIM-MILK
FEDERAL AND STATE DAIRY LAWS**

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⁴Connected with Fertilizer and Feeding Stuff Control

GROWING TOMATOES FOR THE CANNING FACTORY

JAMES TROOP

C. G. WOODBURY

J. G. BOYLE

Growing tomatoes for the canning factory is an agricultural pursuit of no mean importance in Indiana. It is a crop that is usually grown by the general farmer rather than by the specialist and as a rule not as much care is taken in producing it as is necessary to make it yield the greatest profit.

This bulletin discusses the methods which are now in use in the state in growing tomatoes as a field crop for the canning factory, the business being considered from the standpoint of the general farmer. Emphasis is placed on those operations in regard to which there seems to be the greatest need of information. Since tomatoes are grown on many types of soil and under varied conditions throughout the state, the cultural directions given are necessarily general.

The information concerning Indiana tomato culture contained in this bulletin, is based upon field investigations carried on for the past two seasons. During the progress of this work, factories were visited and a field study conducted in nearly every important growing section in the state. Considerable information was received from factory managers and from about 100 growers whose fields were visited many times and whose methods were studied from the time the plants were started until after harvest.

The bulk of the crop is put up by private canning companies, which contract for a certain acreage each season, with farmers located within hauling distance of the factory. Some large concerns have the crop transported by rail from considerable distances, the grower making delivery at the loading platform instead of at the factory. In a few localities the farmers own the factories and put up their own crops, although often this method has not proven satisfactory because of the numerous difficulties that are likely to attend cooperative concerns of this nature. Often there is not sufficient capital at the command of the cooperative canneries to enable them to keep abreast of the times in the way of installing the most modern machinery, and in taking the most up-to-date sanitary measures in the preparation of the tomatoes as food products.

According to the figures of the Indiana Cannery Association, there are about 30,000 acres of tomatoes grown annually for canning purposes in this state. The major portion of this acreage is in Scott, Vigo, Morgan, Warrick, Tipton, Wabash, Howard, Miami, Madison and Clay counties.

I. SOIL

TYPES.—The tomato is grown on many types of soil varying from a light sand to a stiff clay. Under favorable conditions a fair crop can be raised on a variety of soils although the tomato crop, like any other, has its soil preferences. In Scott county which produces as many tomatoes as any other in the state, the soil is generally a clay or clay loam. At Clay City in Clay county the crop is grown on both sand and clay, while in the vicinity of Terre Haute it is grown on clay loam, gravelly loam and sandy loam.



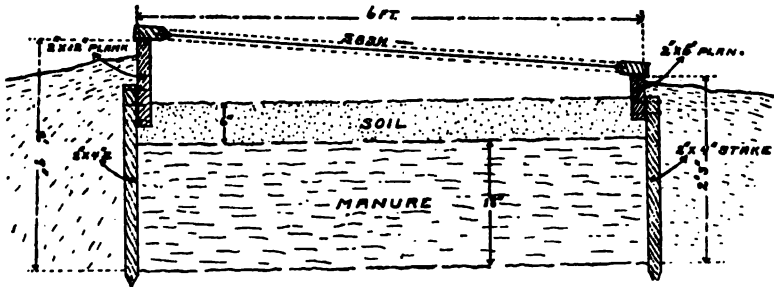
Photo by J. G. Boyle

Fig. 1. Ground properly prepared for receiving tomato plants. Thorough fitting before plants are set is important, if they are to begin growing promptly

The highest yields are being secured on sandy loam soils which are well drained and comparatively rich in plant food. On the heavier soils the yields have not been so large as on the lighter types although the tomatoes are usually more firm and meaty, which it is considered, makes them better adapted for canning. On lighter soils as a rule, the fruits are more juicy and the meat is less solid.

The best all-round soil for the tomato under average Indiana conditions seems to be a rich, sandy loam. Because of its lightness and porousness, rains pass away readily and the air and sunshine penetrate freely, conditions very essential to plant growth.

DRAINAGE.—The tomato is a plant that is very intolerant of "wet feet," and this is especially true for a couple of weeks just after transplanting. The soil used for this crop should be well drained either naturally or artificially and no field should be selected upon which standing water remains after heavy showers.



Drawing by J. G. Boyle

Fig. 2. Section showing the construction of a hotbed. Any one can make a good hotbed and for starting tomato plants their use should be much more general

With a loose, sandy soil, artificial drainage is generally not necessary, but on the heavy clay or clay loams which are extensively used for tomato growing in certain localities of the state, drainage is very essential. Thorough drainage of this type of soil will do a great deal toward increasing its yield of tomatoes and it is the opinion of persons who have made a thorough study of the adaptability of different soils to this crop that, other things being equal, the clay soils when thoroughly drained will produce as high yields as those of a more sandy nature¹. There is opportunity for great improvement in this respect in Indiana tomato growing.

FITTING.—The proper and careful preparation of the soil is one of the most important considerations in successful tomato culture. If the ground is in sod or if the soil contains a considerable amount of clay, it is usually best to plow it rather deep in the late autumn and then disc it every two weeks in the spring until the young plants are ready to be set out. With loam or sandy soils not in sod, early spring plowing is generally practiced and the ground disced or harrowed occasionally to keep the soil loose and to keep down the weeds until setting time.

¹"Tomato Culture" by W. W. Tracy

Just before transplanting, the soil should be put into as fine tilth as possible. This can be done with from two to four thorough harrowings, the last one coming immediately before the plants are set in the field. (See Fig. 1) This will leave the ground in a moist, loose condition in which the tender roots can take a much better hold than they can in soil that has become packed and partly dried out because of a lack of harrowing. Poor and superficial fitting of the ground previous to setting is responsible for large losses every year.

The depth of plowing should be eight inches or even more if the subsoil is not too near the surface. This will allow deep setting and give more territory for the plant roots to forage in. With very thin soils, if there is a hard, poor subsoil underneath, deep plowing would not be practical, although in most sections where tomatoes are grown, deep plowing can and should be done.

FERTILIZING.—It is a common idea among growers that the tomato, since it seems to enrich the soil, needs no fertilizing. In some sections there is a widespread idea that the tomato plant adds fertility to the soil in the same way as do the plants of the clover family. It is true that the clean cultivation given the tomato often results in an improved corn crop the following season. No direct fertility, however, has been added by the tomato plant. As a rule, little fertilizing is done for this crop although some growers are using from 100 to 200 pounds of commercial fertilizer with the addition perhaps of varying amounts of barnyard manure.

No crop will respond more quickly or profitably to fertilizers added in the correct proportions and in the proper condition than the tomato. It is true that it will thrive on poor soils with better success than many other crops, yet this does not mean that fertilizing is not often profitable and advisable. The ideal method of enriching the soil is by adding fertilizer and growing clover crops in years previous to the growing of the tomato. The plant food in a soil which has been made rich gradually through a number of years of good management, is in better condition for utilization by the tomato plant than if all were applied the year the crop is produced.

The roots of this plant being comparatively short and not able to forage to such a distance as most of our cultivated plants are, available plant food must be in close proximity to the young rootlets when the plants are first set in the ground to insure quick growth. If the soil has not a sufficient amount of fertility incorporated in it from the above mentioned method, it should be added in some form. Barnyard manure and commercial fertilizers may be used. The manure is usually plowed under and worked through the soil later by harrowing or discing. The commercial fertilizers are put on after the soil has been prepared for the plants. Various methods of apply-

ing the commercial fertilizer are practiced by growers. Some put it all in the hill, others put part in the hill and broadcast the rest, while others may drill it in the row. As the roots do not extend a great distance from the plant, the main portion of the fertilizers should go in the hill, with perhaps a third of it applied broadcast between the rows three or four weeks later. The late dressing is principally for the roots which are formed upon the stalks and which finally fall down and attach themselves to the ground. The fertilizer put in the hill should be placed in the bottom and covered with soil and so managed that the roots of the plant will not come in direct contact with it.

Voorhees¹ recommends for a soil producing five or six tons of tomatoes per acre, the addition of 500 pounds per acre of fertilizer containing 4.75 per cent. of nitrogen, half of which is available, 7 per cent. of phosphoric acid and 12 per cent. of potash.

Tracy advises in a general way for each acre, the use of 10 tons of well rotted stable manure worked into the soil in late fall and early spring, and from 300 to 600 pounds of commercial fertilizer containing two per cent. nitrogen, six per cent. phosphoric acid, and eight per cent. potash worked into the row about the time the plants are set. Authorities seem agreed that the greater proportion of nitrogen should be derived from nitrate of soda, so that it will be immediately available.

These recommendations will seem to the general farmer to call for an immense amount of fertilizer, but when it is realized that growers who follow these methods and take good care of the crop often get 20 tons per acre and that some have proven yields of even 30 tons per acre, it can readily be seen that our Indiana average of six or seven tons per acre is far too low. The yields given above are being secured on the same types of soil and under the same climatic conditions as are found in this state. There is a great temptation for the grower to put out a larger acreage than he can profitably tend. Greater profits would often be realized if the same amount of fertilizer and the same care were given to a half or two-thirds the area now set. It is much cheaper to grow 15 tons on one acre than on three acres.

From data at present available the best general method to follow in fertilizing this crop, is to get the soil in the best possible state of tilth and then if the grower knows that there has not been sufficient plant food incorporated in the soil in previous seasons, plenty of well rotted barnyard manure should be added. Commercial fertilizer should be used to supplement the manure if the ground is not rich enough to give the plants a good start when set in the field.

¹ "Fertilizers" by Edward B. Voorhees, A. M.

II. GROWING THE PLANTS

SEED.—The first consideration in producing strong healthy plants, is that of securing good seed. The prospect for a paying crop depends largely upon the quality of the seed used. In most localities the canning company purchases the seed in large quantities and then furnishes the growers having contracts with them, with from one and one-half to two ounces per acre. This method has proven quite satisfactory, the seed generally being of fair quality. Seed to be considered of good quality should be true to name, quick to grow, and should possess a high percentage of germination.

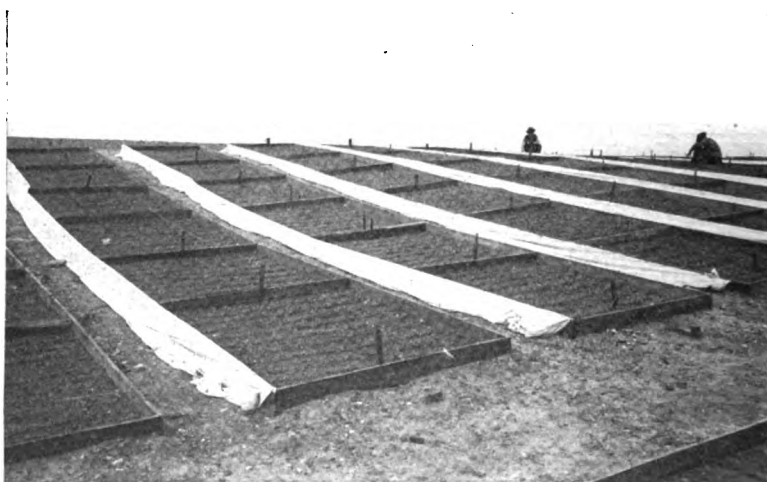


Photo by O. G. Woodbury

Fig. 3. Starting tomatoes in cold-frames having a southern exposure. Cloth is used for a covering here instead of glass. Conditions cannot be so well controlled by this method as with the hotbed

The rate and per cent. of germination can easily be determined by counting out 50 or 100 seeds and placing them on moist blotters between two plates or pans in a warm room. At least 80 per cent. of the seed should germinate within eight days to be considered a good sample. Those requiring a longer period are usually weak in vitality and will not produce strong plants. Although the germination test is carried on under more favorable conditions than are present in the outside seed bed, still it aids considerably in determining what may be the real cause of failure and often prevents long delay. When the plants are grown in hotbeds, about the same

amount of seed should be sown as the germination test indicates, but with outdoor sowing a slightly larger amount should be used.

METHODS OF GROWING PLANTS.—In this latitude the seasons are too short for the full development of the plant and for this reason the seedlings are not started in the field where they are to grow. Two methods are in use for producing the young plants:

1. In hotbeds or cold-frames;
2. In seed beds in the open ground.



Photo by C. G. Woodbury

Fig. 4. Tomatoes in cold-frames ready to transplant. Plants should be gradually hardened off before transplanting, and just before moving should be thoroughly watered

A large per cent. of the plants are being grown at the present time in open, unprotected seed beds, especially by those who make a practice of growing their own plants. In some localities the plants are grown by gardeners who have greenhouses or hotbeds at their disposal and are able to furnish plants at a cost of from \$1.00 to \$3.00 per thousand. Many prefer to obtain their plants in this way rather than to grow them themselves and in favorable seasons it is to be recommended, but when the weather is unfavorable at transplanting time and causes the loss of one or more settings, buying plants proves

to be very expensive. Any one with a little care and experience should be able to grow strong, vigorous plants in large quantities with very little expense.

HOTBEDS.—The safest and surest way of growing tomato plants is by the use of hotbeds. These can be constructed of two inch planks nailed or bolted together in the form of a rectangular box, generally six feet wide and as long as desired. The box should be so made that when the bottom is level, the sash will slope one inch to the foot, which will make it six inches higher on one side than on the other. This slope permits the sun's rays to enter more freely and allows water to run off quickly. The bed should be located on a southern slope if possible and run east and west with the lower side of the frame toward the south. If a southern exposure cannot be secured, a windbreak may be constructed on the north side and the ends to shut off the cold winds from these directions. The beds should also be near the house and near a plentiful supply of water in order that the plants may be carefully and easily cared for.

Common stable horse manure containing no litter, mixed with from one-third to one-half its amount of straw or leaves, is used for providing the artificial heat. Straw or leaves should be added to prolong the heating period of the manure and to keep it from heating too violently. The manure is gathered fresh from the stable, piled up and allowed to heat. When heated through it is forked over and allowed to heat again. During the heating it should be kept under shelter as heavy drenchings make it almost worthless. After it is well heated through the second time, it is put in the hotbed excavation almost to the sash level, care being taken to spread it evenly and to have the corners well filled. After the manure has again warmed up it should be firmed by tramping. The bed is now ready for the soil.

Five or six inches of rich soil containing much humus and sand are then placed upon the manure and after the temperature of the soil has dropped to 90 degrees F. the seed may be sown. A good soil for this purpose can be prepared by making a compost heap consisting of alternate layers of June grass sod and barnyard manure, eight or 10 months before it is to be used. This will give a loose, rich soil very well adapted to hotbed work.

The bed should be prepared early in the spring so that the seed may be sown from the first to the middle of March which will give plenty of time for the developing of good sized plants. The seed should be sown thinly from one-fourth to one-half inch deep, and preferably in rows four to six inches apart thus giving an opportunity for thinning and stirring the soil. Broadcast sowing although not uncommon is not to be recommended.

On warm days the bed should be ventilated to make the plants grow stocky and prevent them from wilting. Tomatoes thrive best at a temperature of from 75 to 85 degrees during the day and about 60 degrees at night. In watering, the aim should be to water thoroughly but not often. The practice of adding a small amount of water each day should never be followed as it encourages the growth of insects and diseases and benefits the plant but little since the moisture does not reach the roots.

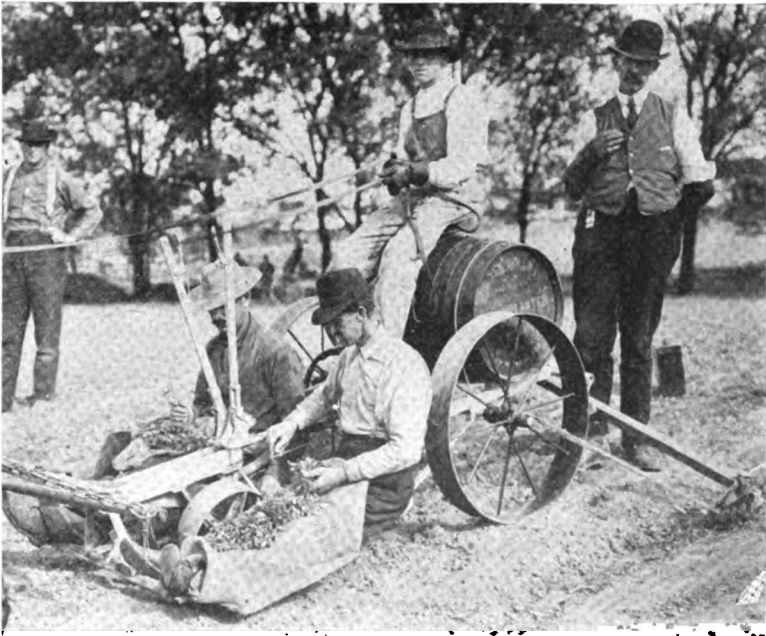


Photo by O. G. Woodbury

Fig. 5. A machine for setting tomatoes, ready to start across the field. The two men in front alternate in setting. Each plant receives about a half pint of water from the tank

A week or 10 days before the time to transplant into the field, or earlier if the weather permits, the sash should be removed during the day to harden off the plants. It is also a good plan to stop watering at this time and then wet down thoroughly just before taking to the field.

Different materials are used for covering hotbeds. A cheap and quite common one is light canvas or heavy sheeting which has been

oiled. A more substantial covering is the hotbed sash, which is coming into use more and more, as it is more reliable than the cloth and makes it possible to control the temperature with more certainty.

COLD-FRAMES.—A cold-frame differs from a hotbed in that no artificial heat is used. They are usually started and the seed sown the last of March or first of April. Otherwise their construction and care is the same as that given above for hotbeds.

SEED BEDS.—A majority of the plants grown at the present time are produced in seed beds in the open ground. A sheltered place is selected and the soil thoroughly prepared. The seed is sown as soon as the weather permits, which in average seasons is from the middle to the last of April. A rich, well drained sandy loam, with a good elevation and a southern exposure, furnishes the best conditions for an open seed bed.

If the soil in the seed bed needs fertilizing, well rotted manure should be thoroughly worked into it. Commercial fertilizer may be used if it is worked carefully through the soil before the seed is sown. This thorough working is necessary to prevent the young plants from being injured by coming in direct contact with the fertilizer. Several instances of such injury were reported during the season. Well-rotted manure is preferable for this purpose to commercial fertilizer.

On the whole, this method of growing plants is not satisfactory. The risk is too great and the quality of the plants produced is usually not of the best. Only in the most southern counties can it be practiced with any degree of success and even here more uniform results may be secured by using hotbeds or cold-frames in which external conditions can be controlled to a much greater degree.

TRANSPLANTING.—The young plants are set in the field as soon as possible after all danger of frost is past, usually from May 15 to June 10. The best time for transplanting is on cloudy days when the soil is moist, or in the mornings and evenings if the days are warm and sunshiny. Growers who put out a large acreage cannot always secure these conditions, but with those who grow from one to four acres, all the transplanting can be done in the mornings and evenings and on cloudy days, by careful managing. A few days delay in securing these conditions will mean an earlier and larger harvest than if the plants are put into a dry soil on hot days and their growth severely checked.

Setting the plants in the field is done mostly by hand, although in some localities a two horse transplanter is used. Three persons are usually required to operate the planter, and with it five to seven acres a day may be set. When the transplanter is used, the soil must be in a first class physical condition and the plants of an equal height to insure good results. The points in favor of this machine are that

it does not pack down the soil in the rows and the plants can be set out much faster and easier than by hand. Planters can be purchased for from \$55 to \$65 and all who have used them when the soil and plants are as they should be, have reported their work as entirely satisfactory.

The grower putting out from one to five acres, perhaps would not be warranted in buying a planter and so necessarily sets his plants by hand. A hoe, spade or some other tool is used for making



Photo by O. G. Woodbury

Fig. 6. Rear view of tomato planter showing how the soil is packed about the plants

the hole in the soil, into which the roots are inserted and the soil packed firmly around them. As the tomato stalk takes root readily, there is not much trouble in transplanting, provided it is not too hot and dry. When set by hand, cultivation should follow immediately to loosen the soil which has become packed.

DEPTH.—The depth of setting varies with the size of the plants. If they are short and stocky, four to six inches is sufficient, but when the stems are long they may be set even a foot deep if the subsoil permits, without injury. It is a good plan to set them deep if the stalks

are long and weak, in order to prevent the wind and rain from breaking them over. When set deep the plant takes a little longer for the initial starting, but numerous roots are thrown out all along the stem below the surface of the soil thus producing an extensive root system which causes the plant to grow very rapidly when it does start.

Under average conditions, plants about 10 inches in height, with stocky stems, planted five inches deep, prove most satisfactory.

DISTANCE APART.—The proper distance for planting tomatoes in the field is from four by five to five by five feet with the varieties that are now being grown for canning purposes. Plenty of space should be given for the plant to spread out and still have enough remaining room for picking at harvest time without stepping upon the vines.

With a clay soil in which the plants do not tend to grow so large, they may be set a little closer than on sandy loam, but under no consideration should they be less than four by four feet. Plenty of space should be left for the full development of the vine.

The plants may be set in rows in both directions or in only one direction, although when set by the latter method there is a great tendency to get the plants too close together. It takes a little longer to mark out the ground in both directions and set the plants so that they may be cultivated both ways but the grower is amply repaid for his trouble because he can keep his field clean and free from weeds and do it cheaper than if the plants are set in rows but one way.

At setting time it is well to leave room for a driveway about every 20 rows so that the crates can be gathered quickly without driving upon the vines. By omitting every eighth or tenth row in the opposite direction also, the handling will be facilitated to a considerable extent. The space left for driving may be planted to crops that will be out of the way when the tomatoes are harvested.

CULTIVATION.—As soon as possible after the plants have been set in the field, they should be cultivated. This will loosen up the soil where it has been packed down during the work of transplanting and will start the young plants into growth. The first cultivation may be rather deep and close to the plants, the shovels being set to throw the dirt slightly toward them. The succeeding cultivations from seven to 10 days apart should be shallow and farther away, the aim being to form a dust mulch to prevent evaporation as well as to keep down weeds.

The cultivation of this crop is neglected more, on the whole, than any other of the operations connected with raising it. Perhaps this can be accounted for by the fact that the farmer is very busy with his other crops at this season of the year and so leaves the tomato to shift for itself. This proves disastrous to the crop as it allows

weeds to choke out the plants and the ground to become baked and hard, thus encouraging evaporation of the soil moisture and greatly decreasing the yield.

When the first fruits are beginning to set on the vines, cultivation is usually discontinued. If the plants are still small they may be cultivated once between each row, care being taken not to shake the vines which causes the small fruit to drop. Plants properly cared for will usually cover a considerable portion of the ground when



Photo by C. G. Woodbury

Fig. 7. Constant cultivation is one of the secrets of successful tomato growing. These plants are check rowed to allow horse cultivation both ways

the fruits begin to form, thus preventing evaporation to a great extent. Throughout the remainder of the season, two or three thorough hoeings will generally be sufficient to keep the weeds under control.

The tool commonly used in caring for the crop is the two horse corn cultivator. One of these should be selected with several small teeth to break the soil in preference to those having two large shovels which leave the soil in ridges. Level and shallow cultivation is preferable to hilling or ridging.

III. HARVESTING, YIELDS AND PROFITS

HARVESTING.—The time of harvesting depends to a great extent upon the earliness of transplanting and the weather conditions at the time the first fruits are setting. Under favorable conditions the first picking occurs about 80 days after the plants are set in the field. This will bring the beginning of the picking season from the first of August to the first of September and the vines usually continue to bear until the first killing frost.

Not as much care need be exercised in harvesting this crop for canning purposes as is necessary when the fruit is to be sold upon the market, yet it should not be picked and handled carelessly as is often the case. Each fruit should be red ripe on all sides before taking it from the vine if the grower hauls his fruit direct to the factory.

In some cases, at factories visited during the canning season, from one-fifth to one-third of the fruits in certain deliveries had to be taken out on the sorting tables because of their green condition. This causes dissatisfaction on the part of the buyer and since the grower usually contracts to deliver only ripe fruit it will be to his advantage to bring it to the factory in that condition. Over ripeness should also be avoided. Crates of tomatoes delivered to the canning factory in a dripping condition are unfit for use and should be avoided both from the standpoint of the grower and the canner. The fruit cannot be used for number one canned goods, as it will not hold up during the process of canning and the grower loses more or less on account of shrinkage. Pick at the proper time, pick carefully and handle carefully after picking and the crop will bring more money to both grower and canner.

In removing the fruits, care should be taken not to move the vines any more than is positively necessary. Lifting and pulling them about greatly reduces the yields in many instances. The stems lying on the ground take root and carry considerable nourishment to the ripening fruit and as it is the younger roots that are of the most value to the plant it is very important that they be left intact. Not only is this food supply cut short, but many of those fruits already formed are knocked off through rough handling of the vines.

For picking, half bushel baskets with handles have proven quite satisfactory. From the picking basket, the fruit is put in crates holding about 50 pounds, to be hauled to the factory. These crates are easily handled and keep the fruit from being crushed in hauling. The canning companies usually own the crates and either rent or loan them to the growers. The crates have aided considerably in the proper handling of the crop.

YIELDS.—With the proper care and a good season without exceptional losses from insect and disease attacks, the yields may be expected to run from six to 12 tons per acre. Occasionally a grower reports a yield of 16 or even 20 tons. Roughly speaking it requires a yield of at least five tons per acre to pay expenses at the usual contract prices. A study of the tabulated statements of yields from several hundred growers representing every important tomato grow-



Photo by J. G. Boyle

Fig. 8. Hand hoeing to remove the weeds after horse work has ceased. By good management there ought not to be much of this to do

ing section in the state, shows that seven to eight tons per acre is considered a fairly good crop. The failures due to neglect or other causes cut the actual average yield down to considerably less. There is no doubt that the yield of careful growers could easily be raised to 12 or 15 tons per acre by proper attention to the factors discussed in this bulletin.

PROFITS.—The profits depend upon the cost of growing, the yield and the selling price. The cost of growing depends largely on the

ability of the person growing the crop. Estimates of reliable growers place it at from \$25 to \$50 per acre. Probably \$35 will be a fair estimate.

The price received for the crop varies from \$7 to \$8.50 per ton, depending upon the canning company buying the fruit. Under the best conditions from \$50 to \$75 profit per acre may be realized, but if the crop does not receive the care and attention that it should, the profits are often very small and in some cases the grower does not get any more out of his crop than the cost of producing it.

IV. VARIETIES

Throughout the tomato growing section of the state the Stone variety is grown considerably more than any other. Each season new kinds are being tested, but as yet none have proved generally as satisfactory as this one. No doubt in the near future a variety will be put upon the market as much superior to the Stone as the Stone was superior to those that were being grown when it was introduced. Experienced plant growers are working at the present time trying to secure such a variety. A good type of tomato should possess the following characteristics:

1. Fruit smooth without ridges and without a depression at the stem end;
2. Interior firm and well formed;
3. Vine an upright grower with strong stems;
4. Plant producing a large weight of fruit throughout the season;
5. Uniform red color which remains bright during preserving processes.

Greater Baltimore, Bolgiana, Royal Red, and a few other varieties are being grown in some localities instead of the Stone.

V. INSECTS AND DISEASES

At the present time the tomato in Indiana is not troubled seriously by either insects or diseases. In some localities during certain seasons, one or two growers may be troubled to a considerable extent, but at no time has an entire district been deprived of its crop, as often occurs with some of our other cultivated fruits.

TOMATO WORM.—This is the large greenish worm commonly called tobacco worm, which lives upon the foliage. If they are present in large numbers and are not controlled they will soon ruin the vines, as the amount consumed by each daily is enormous.

They can be controlled by the use of arsenical sprays such as Paris green and arsenate of lead, or by hand picking.

CUT WORMS.—There are numerous species of these worms which often destroy the plants by eating them off close to the ground just after they are transplanted. The worms are about one and one-half inches long and vary in color from greenish to a dull gray.

They may be controlled to a certain extent by having the ground plowed a couple of weeks before transplanting and by scattering poisoned baits about the field in the evening, care being taken to keep all vegetation down in order to compel the worms to eat the poison. The baits are prepared by rolling up bunches of clover, grass or bran and wetting them with a solution of Paris green and water.

POTATO BEETLE.—The treatment for this insect is the same as that given above for the tomato worm.

STALK BORER.—In some seasons this has proved quite destructive in certain localities. The borer enters the stalk and tunnels through it, causing the plant to suddenly wilt and die. Either the borer or the tunnel it has made, can be readily found and the trouble ascertained. The remedies for this pest are preventive and consist in keeping all weeds and foreign plants from the field and in practicing a rotation of crops.

POINT ROT.—This occurs at the blossom end of the green fruit gradually spreading until the fruit is entirely worthless. The disease seems to prefer dry weather and light soils. At present there is no successful means of controlling it under field conditions. Sub-irrigation is said to have proven a successful remedy on small areas.

RIPE ROT OR ANTHRACNOSE.—While ripening, the fruit is often attacked by this disease which causes it to decay rapidly. It is more prevalent in rainy seasons, in some instances destroying the fruit on entire fields in a few days. Preventive measures only can be made use of, such as destroying the diseased fruits and planting far enough apart so that the light and air can enter to dry out the foliage.

LEAF SPOT DISEASES.—There are several fungous troubles which affect the leaves with varying severity. These diseases are characterized by the appearance of small, irregular or circular brown spots, which may spread until the leaf is killed. These diseases appear every season and while they occasionally do considerable damage in a locality, are hardly of sufficient economic importance in Indiana as to be a serious factor in the production of this crop. Thorough spraying with Bordeaux mixture is the standard remedy for the control of this trouble. It is likely that these diseases may cause more trouble in the future than they have in the past and that spraying will become as regular an operation in Indiana tomato growing as it is in some other sections of the country.

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SUMMARY

The conclusions to be drawn from the foregoing are as follows concerning the production of tomatoes for the industry may be stated as follows:

1. It is necessary that greater care be exercised in the young plants. Seedlings of inferior plants are not only the result of poor seed or unsuitable growing they are also the great and prime cause of the crop.

2. Prepare the ground more thoroughly and give more and more to drainage and fertilizing. These are failing in growing tomatoes because they do not meet the cultural requirements of the plant.

3. Control weeding and thinning. It is a neglect of cultivation is responsible for a greater proportion of crop loss than any other single factor in the production of the crop.

4. Handle more carefully during the picking season. It is observed that careless picking and handling of the plants so cut down the total salable product returns barely paid for the expense of growing and marketing.

5. Plant smaller areas and practice more intensive culture.

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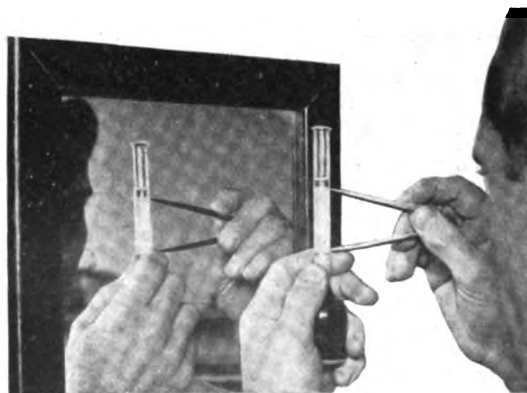
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PURDUE UNIVERSITY

Agricultural Experiment Station

BULLETIN No. 145, VOL. XV

JUNE, 1910



TESTING CREAM FOR BUTTER FAT

Published by the Station:
LAFAYETTE, INDIANA
U. S. A.

SUMMARY

The conclusions to be drawn from the foregoing summary of investigations concerning the production of tomatoes as a field crop for the cannery may be stated as follows:

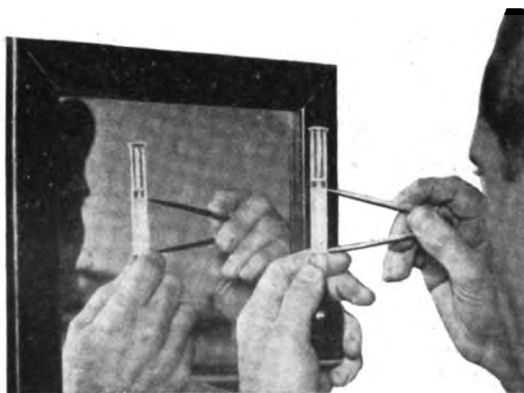
1. It is necessary that greater care be exercised in the growing of the young plants. Millions of inferior plants are now set. They may be the result of poor seed or unskillful growing. In any case they cut down the yield and profit from the crop.
2. Prepare the ground more thoroughly and give more time, labor and money to drainage and fertilizing. Thousands of farmers are failing in growing tomatoes because they do not realize the soil and cultural requirements of the plant.
3. Cultivate constantly and thoroughly. It is probable that neglect of cultivation is responsible for a greater proportion of unprofitable tomato yields than any other single factor entering into the production of the crop.
4. Handle vines carefully during the picking season. In many tomato fields it was observed that careless picking and rough treatment of the plants so cut down the total salable product that the cash returns barely paid for the expense of growing and marketing.
5. Plant smaller areas and practice more intensive methods of culture.

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PURDUE UNIVERSITY
Agricultural Experiment Station

BULLETIN No. 145, Vol. XV
JUNE, 1910



TESTING CREAM FOR BUTTER FAT

Published by the Station:
LAFAYETTE, INDIANA
U. S. A.

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TESTING CREAM FOR BUTTER FAT

GEORGE SPITZER

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SUMMARY

1. Twenty-one and four tenths per cent. of the cream test bottles used in Indiana creameries were found to be incorrect; the maximum error was 10 per cent.

2. All Babcock glassware used where milk and cream are bought and paid for on the butter fat basis should be tested for accuracy. This can most readily be done by the Burette Method of Calibration.

3. The 9 gram 50 per cent. 6 inch cream test bottle and the 18 gram 50 per cent. 9 inch cream test bottle are the least objectionable styles of cream test bottles.

4. Without the use of representative samples of cream, correct tests cannot be made. Proper care of the cream on the farm and thorough mixing before sampling makes possible the taking of representative samples.

5. Composite sampling and testing are unsatisfactory and the results unreliable. Their practice cannot be too strongly condemned. The samples of each delivery should be tested.

6. Cream samples are best tested upon arrival at the creamery. Storing them under ordinary creamery conditions causes a rise in the per cent. of fat, due to evaporation of moisture. If they must be stored, the bottles should be tightly sealed and placed in the refrigerator.

7. Cream samples must be made uniform in body before testing.

8. The cream must be weighed and not measured into the test bottles. The weighing should be done on sensitive scales in good working condition and resting on a level table.

9. Sulphuric acid of a specific gravity of 1.82 to 1.83 should be added to the test bottles until the mixture of acid and cream, immediately after shaking, has the color of coffee with cream in it.

10. The clearest and most accurate tests are obtained by two additions of water.

11. The tester must be run at the proper speed. A 12 inch wheel requires 1000 revolutions; an 18 inch wheel requires 850 revolutions per minute.

12. The fat column does not consist of pure butter fat, but contains considerable and varying quantities of impurities, consisting largely of acid and water.

13. The per cent. of impurities contained in the fat column varies with the speed of the tester and the amount of sulphuric acid used. Low speed and excessive acid increase the impurities.

14. All of the fat in the cream does not appear in the fat column. The fat lost in the test is the residual fat and a portion of the volatile fatty acids.

15. The loss of residual fat is greatest at a low speed and with insufficient or excessive amounts of acid. The loss of volatile fatty acids increases with the increase in the amount of acid used.

16. The losses due to residual fat and escape of volatile fatty acids are practically offset by the gains due to impurities in the fat column, provided that the test is made under normal conditions.

17. For uniform and accurate reading of the test, the meniscus must be eliminated. This can best be done by the use of glymol.

PURPOSE

The purpose of the experiments described in this bulletin is to determine definitely and to bring out clearly the lack of uniformity in the results of the Babcock test with cream, to recommend modifications of the Babcock test to remove its objectionable features, and to augment the accuracy and reliability of the test without curtailing its simplicity and rapidity.

PLAN AND SCOPE OF EXPERIMENTS

The magnitude of the importance to the dairy interests of state and country of conclusive results on cream testing and the difficulties involved in the solution of this problem necessitated the execution of experiments along broad and many-sided lines, in a most thorough and exhaustive manner. This problem was attacked and studied, therefore, from all known angles as well as from angles heretofore not considered.

The scope of these experiments embraces a study of the selection and accuracy of cream test bottles and practical methods of calibrating them, the taking, care and preparation of cream samples, the operation of the Babcock test in all its phases, the conditions affecting the correct reading of the test, the possible errors due to chemical and mechanical defects of the test, and the working out of new modifications for the purpose of enhancing the accuracy of the results.

IMPORTANCE OF ACCURATE GLASSWARE

The use of accurately graduated test bottles is the first essential in the testing of cream. At best, the testing of cream is associated

with a variety of factors and conditions of a changeable and uncertain nature. In addition to this, the correctness of the test may be rendered questionable as the result of carelessness or ignorance, or both, in the sampling of the cream and in the operation of the test. The reliability of the results should, therefore, be strengthened by eliminating as many of these uncertain factors as possible. Investigations in this and in other states have shown that considerable and varying numbers of the test bottles used in the creameries are not correctly graduated. The use of these bottles is bound to yield incorrect tests. Too much emphasis cannot, therefore, be placed on the importance of eliminating this disturbing factor, inaccurate test bottles, from the test.

THE CALIBRATION OF BABCOCK TEST BOTTLES

In order to determine the accuracy of the test bottles each bottle must be carefully tested with an approved, simple, rapid and accurate method of calibration.

The principal methods of calibrating Babcock test bottles are: the mercury method, the displacement or Trowbridge plug method, the water gravimetric and the burette method.

The comparative efficiency of these methods was tested out by this Department with the following findings:

The *Mercury Method*, when all conditions are right, such as temperature, sensitiveness of scales, etc., is accurate, but not rapid. The chief objections to this method, as used in the average dairy or creamery laboratory are the following: the need of a sensitive analytical balance, time required for double weighing, difficulty in transferring the mercury from one bottle to another, tendency of the mercury to stick to the glass, difficulty in obtaining suitable stoppers to fit the neck of each bottle, difficulty in keeping the mercury clean, variations in specific gravity due to changes in temperature, and possible error in reading the upper curve of the mercury column.

The *Trowbridge Plug Method* is rapid and, where the plug is correct, accurate results may be obtained. Its chief objections are the following: in many cases the plug itself is faulty, which renders the method worthless. Brass plugs were found more accurate than glass plugs. Glass plugs are unsatisfactory also, owing to the ease with which they break. The plugs do not indicate which portion of the graduation is off. The plug may indicate the correctness of the total graduation and yet a portion of the graduation may be incorrect. This objection is especially applicable to bulb neck bottles where often the capacity of the bulb does not correspond with the graduation. The plug frequently causes difficulty in correctly read-

ing the meniscus due to the interference of the wire to which the plug is attached. It was further found that, in bottles with narrow necks, such as the 9 gram 50 per cent. and the 18 gram 30 per cent. bottles, it was necessary to have the water extend one-half of the meniscus above the zero mark in order to bring the bottom of the top meniscus to the top graduation, that is, to the 50 per cent. or 30 per cent. mark, respectively. In bottles with wide neck graduations, such as the 18 gram 40 per cent. and 18 gram 50 per cent. bottles, it is necessary to start with the bottom meniscus at the zero mark in order to bring the bottom of the meniscus at the top of the column to the top graduation. This difference is probably due to the partial destruction of the meniscus by the wire attached to the plug.

Calibration by Weighing the Water. This method is accurate when operated properly. Its chief objections are the need of a sensitive analytical balance and time required for double weighing, conditions which greatly minimize its usefulness for ordinary purposes.

Calibration by Measuring the Water.—The Burette Method, as recommended by the U. S. Bureau of Standards, Vol. 4, No. 4, was found to be the most practical and most satisfactory. An accurately calibrated 50 c.c. burette may be used. The bottles are filled to the zero mark with water, and the water from the burette is drawn into the test bottles. Drops of water which may adhere to the necks of the bottles after the bulb has been filled with water to the zero mark must be carefully removed after the water is drawn from the burette. This may best be done by coiling a piece of filter paper or blotter and wiping dry the insides of the necks with it. By the use of a float, very accurate and comparatively rapid work can be done. Any portion of the graduation can be calibrated. Errors in graduation which were not noticed with the other methods were easily detected with this method. The method is rapid and can be operated in any creamery where an accurate 50 c.c. burette graduated to .05 or .1 c.c. is at hand. Alcohol may be used instead of water, though for all practical purposes water is most desirable.

In the use of this, as in all of the other methods, the temperature of the testing liquid, of the testing apparatus and of the test bottles should be the same. Differences and changes in temperature tend to introduce an element of error, since such changes affect the volume of water and the caliber of the glassware. Therefore, by having the temperature of the water and glassware the same, this method eliminates the errors incident to the use of the other methods described, except the possible difference in the coefficient of expansion between the burette and test bottle. The maximum variation of expansion, however, would be so small that it would safely come within the error of reading.

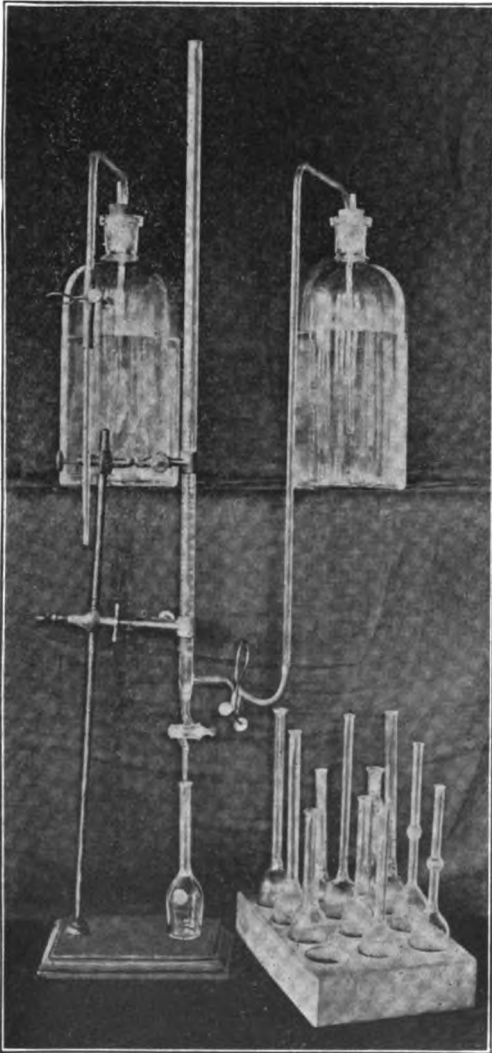


Fig. 2. Showing a complete and convenient equipment for rapid calibration of test bottles. The test bottles are filled to the zero mark with water from the bottle at the left. The bottle on the right fills the calibrating burette automatically with water. The burette has a capacity of 50 c.c. and is graduated to .05 c.c.

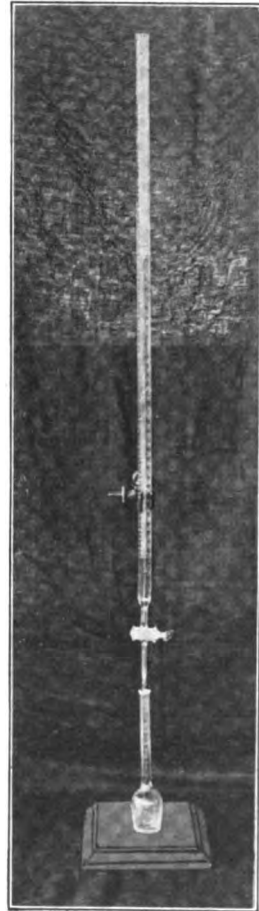


Fig. 3. Showing a simple equipment for calibrating test bottles in the creamery. The burette has a capacity of 50 c.c. and is graduated to .1 c.c. The number of c.c. of water which any part of the scale in the test bottle should hold is shown in Table I

¹Osborne and Veazey, U. S. Bureau of Standards, recommend the burette method, using water as the standardizing medium. They make the following statement: "Instruments to *contain* are sometimes tested by weighing their contents, but usually by filling them from a special measuring pipette.

This method of testing flasks obviates observations of temperature and the calculations required in their reduction to equivalent volumes, while it affords equal accuracy if care is observed. The method assumes that the temperature of the water is the same in the pipette and in the flask, and that the co-efficients of expansion of the two vessels are nearly equal. No large systematic error is peculiar to the volumetric method, except, under very unfavorable conditions, this error of temperature."

Since the burette method with water combines most of the virtues of the various methods in vogue, such as accuracy, rapidity, simplicity, ease of manipulation, and, since it is used and advocated by a recognized authority such as the U. S. Bureau of Standards, its use is here recommended.

TABLE I.—Showing the Equivalent of Cubic Centimeters in Per Cent. on Test Bottle Graduations, when the Burette Water Method of Calibration is Used

18 Gram bottles		9 Gram bottles	
.05 c.c.	.25 per cent.	.05 c.c.	.50 per cent.
.1 c.c.	.50 " "	.1 c.c.	1.00 " "
.2 c.c.	1.00 " "	.2 c.c.	2.00 " "
.3 c.c.	1.50 " "	.3 c.c.	3.00 " "
.4 c.c.	2.00 " "	.4 c.c.	4.00 " "
.5 c.c.	2.50 " "	.5 c.c.	5.00 " "
.6 c.c.	3.00 " "	.6 c.c.	6.00 " "
.7 c.c.	3.50 " "	.7 c.c.	7.00 " "
.8 c.c.	4.00 " "	.8 c.c.	8.00 " "
.9 c.c.	4.50 " "	.9 c.c.	9.00 " "
1.0 c.c.	5.00 " "	1.0 c.c.	10.00 " "

¹U. S. Bureau of Standards, Bulletin No. 4, Vol. 4, 1908, pp. 588-589

ACCURACY OF CREAM TEST BOTTLES USED IN INDIANA CREAMERIES

In order to determine the relative proportion of accurate and inaccurate testing glassware used in Indiana creameries, this Department invited the creameries of the state to send their testing glassware to the Purdue Experiment Station for calibration. In answer to an announcement in the daily and agricultural press of the state, a press bulletin and private letters mailed to every creamery, 75 creameries responded. The total pieces of glassware received and tested were 6513. Of this number, 4125 were cream test bottles, 2243 were milk test bottles and 145 were miscellaneous glassware. All glassware found correct was marked with the letters S. B. P. (Standard Bottle Purdue), before being returned to the owners.

The results of these tests are shown in detail in Table II.

TABLE II.—Showing Kind and Quality of Testing Glassware Used in Indiana Creameries

Kind of glassware	Number calibrated	Number incorrect	Per cent. incorrect	Maximum error
Cream Test Bottles				
55 per cent. 18 gram, straight neck, 6 inch	8	1	12.5	+ 2.0
50 per cent. 18 gram, straight neck, 6 inch	1950	422	26.7	+ 10.0
50 per cent. 18 gram, bulb neck, 6 inch	89	67	75.2	— 1.5
40 per cent. 18 gram, straight neck, 6 inch	213	35	16.4	— 1.0
35 per cent. 18 gram, straight neck, 6 inch	6	5	83.3	+ 0.75
30 per cent. 18 gram, straight neck, 6 inch	1477	170	11.5	+ 1.5
50 per cent. 9 gram, straight neck, 6 inch	307	42	13.6	— 2.0
18 gram, straight neck, 9 inch	75	34	45.3	— 1.5
Milk Test Bottles				
10 per cent. milk bottles	2243	25	1.11	+ 2.0
Miscellaneous Glassware				
Skim-milk bottles	36	none	none	none
18 c.c. pipettes	20	"	"	"
17.6 c.c. pipettes	69	"	"	"
Acid measures	20	4	20.0	1.0
Totals	6513	805	12.4	10.0

Total cream test bottles shipped direct from dealers	1115
Number incorrect	130
Per cent. incorrect	11.66
Total cream test bottles shipped from creameries	3010
Number incorrect	646
Per cent. incorrect	21.4
Total milk test bottles shipped direct from dealers	570
Number incorrect	1
Per cent. incorrect	.2
Total milk test bottles shipped from creameries	1673
Number incorrect	24
Per cent. incorrect	1.4

The data in the above table are interesting, instructive and suggestive. They show that 18.8 per cent. of the cream test bottles and 1.1 per cent. of the milk test bottles were incorrect. The 35 per cent. 18 gram 6 inch straight neck and the 50 per cent. 18 gram 6 inch bulb neck types contained the maximum per cent. of incorrect bottles, namely, 83.3 per cent. and 75.2 per cent. respectively. The 30 per cent. 18 gram 6 inch straight neck, the 55 per cent. 18 gram 6 inch straight neck and the 50 per cent. 9 gram 6 inch straight neck types contained the minimum number of incorrect bottles, namely, 11.5 per cent., 12.5 per cent. and 13.6 per cent., respectively.

The per cent. of incorrect cream test bottles received from the creameries was 21.4; the per cent. incorrect cream test bottles received from the dealers of glassware, ordered by the creameries to be shipped to us for testing, was 11.66. These figures show that when the dealers of glassware were informed that their goods would be checked up officially, they took greater pains to furnish properly graduated glassware only.

The errors in the cream test bottles ranged from .5 per cent. to 10 per cent. The errors in the milk test bottles ranged from .2 per cent. to 2 per cent. In the case of some creameries their entire outfit was inaccurate.

These facts speak for themselves. The creameries are not receiving accurate glassware. They are not getting what they are paying for. It is their right, privilege and duty to demand correct testing bottles and it is the right and privilege of their patrons to demand that none but accurately graduated glassware be used in the determination of the per cent. of fat of their cream or milk.

New York, Massachusetts, New Hampshire, Wisconsin, Kansas and other dairy states have laws requiring that all Babcock glassware used in creameries and other milk factories where milk and cream are bought and paid for on the butter fat basis, shall be tested for accuracy by their state experiment station or their dairy commissioner.

The rigid enforcement of these laws has greatly reduced the per cent. of incorrectly graduated glassware in these states.

Indiana has as yet no such law. This fact is probably largely responsible for the high per cent. of inaccurate test bottles received by and used in our creameries. We are serving as the depository of the scrub glassware that is rejected in those states which are protected by adequate laws.

The Legislative Committee of the State Dairy Association has now under consideration a bill covering this very problem which is to be submitted for enactment at the next session of the state legislature. All interested in the welfare of the dairy industry should lend their services to acquaint their state representatives with these needs and to urge them to exert their influence in favor of the enactment of this bill.

SELECTION OF TEST BOTTLES

There are various different styles of cream test bottles on the market. Those most used are shown in Figures 4 and 5. They differ from one another largely in length of neck, per cent. of graduation and capacity of charge.

The length of the neck is either 6 inches or 9 inches; the grad-

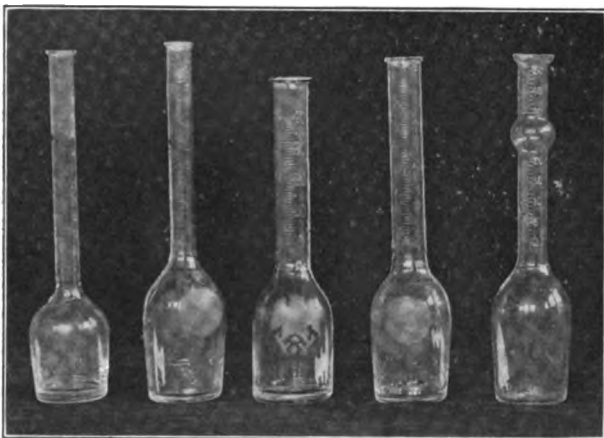


Fig. 4. Showing the various styles of 6 inch cream test bottles in use

uation varies all the way from 25 per cent. to 55 per cent.; some of the 9 inch bottles are graduated to 100 per cent. This latter type is of rare occurrence, however.

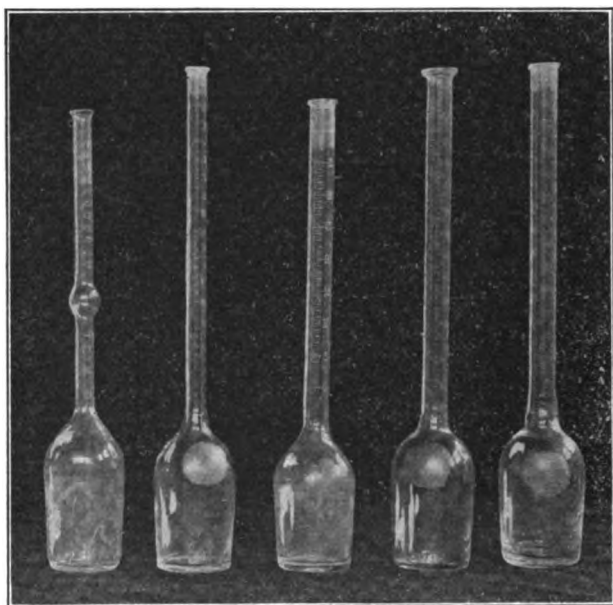


Fig. 5. Showing the different styles of 9 inch cream test bottles in use

Each of these various types of test bottles has its advantages and disadvantages, its friends and its enemies, so that no one special bottle can consistently be recommended as the best. There are certain fundamental principles, however, which must be incorporated in the construction of all desirable styles of bottles and the absence of which in any style of bottle renders that particular style undesirable for use. A desirable test bottle must combine ease and accuracy of reading, ease and speed of manipulation and freedom from excessive breakage under normal conditions.

EASE AND ACCURACY OF READING

This factor is determined by the diameter and length of the neck and the size of the charge; the larger the diameter of the neck, other factors being the same, the narrower the graduation and, therefore, the more difficult the reading and the greater the probable error of reading. To this class of bottles belong the 50 per cent. 18 gram bulb neck 6 inch bottles, the 50 per cent. 18 gram straight neck 6 inch bottles and the 40 per cent. 18 gram straight neck 6 inch bottles. Correct reading of the test by the use of these bottles is exceedingly difficult, if not impossible. This refers especially to the 50 per cent. bottles. The bulb neck bottle has the additional objection that

two separate readings are required whenever the fat column reaches both above and below the bulb. In case neither extremity of the fat column extends as far as the graduation above and below the bulb, two approximate readings must be made, greatly curtailing the accuracy of the results. In the 50 per cent. straight neck bottle the abnormally large diameter of the neck reduces the size of the graduation to such an extent that accurate reading is impossible. The smallest division represents one per cent. For these reasons both the 50 per cent. 18 gram bulb neck 6 inch bottle and the 50 per cent. 18 gram straight neck 6 inch bottle cannot be recommended, but should be condemned.

The 30 per cent. 18 gram 6 inch bottle has a reasonably narrow neck and is graduated into one-half per cent., which insures a more accurate reading. When testing cream of over 30 per cent. fat, these bottles permit of the use of half a charge, 9 grams, only. This necessitates the doubling of the reading, multiplying the possible error by two, and the calculation in itself introduces an additional opportunity for mistakes. The desirability of this bottle, too, is, therefore, questionable.

The 50 per cent. 9 gram 6 inch bottle has a neck of small diameter and the graduation is divided into .5 per cent., facilitating accurate reading; the per cent. of fat can be read off direct. Furthermore, only one-half of the amount of cream is needed to make the test. This factor, though insignificant in the case of one test, makes possible a very material saving of cream where a large number of samples is to be tested.

The 9 inch bottles are desirable because they have necks of relatively small diameter.

EASE AND SPEED OF MANIPULATION AND FREEDOM FROM EXCESSIVE BREAKAGE

The 6 inch bottles are preferable in this respect. They can be comparatively easily and rapidly filled and, when properly constructed, are not prone to break. The 9 inch bottles, on the other hand, are top heavy, fall over more readily, are not filled quite as rapidly, break more easily in the tester and are cleaned less readily than the 6 inch bottles.

All things considered, the 9 gram 50 per cent. 6 inch bottles and the 18 gram 50 per cent. 9 inch bottles are the most satisfactory types of cream test bottles, and of these two types the 9 gram 50 per cent. 6 inch bottle is perhaps the more desirable, subject, however, to the factor of personal preference.

In conclusion of this chapter, the suggestion is pertinent that much good might result of the adoption of a standard bottle, uniform in size, in diameter and length of neck, in per cent. of graduation, in quality of glass and in workmanship.

THE SAMPLING OF CREAM

To secure representative samples of the cream to be tested is obviously the foundation of an accurate test. Unless the sample is a fair and representative one, the entire test can be no more than mere guess work. Notwithstanding this fact, the sampling of cream has so far received very little attention by the average creamery and by those interested in the welfare of the dairy industry. The result is that the methods used for sampling are exceedingly crude, the men doing the work are often ignorant concerning the principles involved in proper sampling and, as a rule, careless in the performance of this work, and the cream is frequently in such mechanical condition that it is very difficult, if not impossible, to secure a representative sample.

CUSTOMS OF DELIVERING CREAM IN INDIANA

In Indiana, as in many other states, the following methods of delivering cream are in vogue:

The Patron Hauls the Cream Direct to the Creamery. This practice insures the most favorable opportunities for correct sampling. The creamery has the sampling under its control. The person who attends to this work usually appreciates the importance of it, and is better qualified to do the sampling than the average station man or hauler. Furthermore, the creamery is better equipped to properly handle cream that is in poor condition for sampling, such as thick, churned or frozen cream.

The Patron Hauls the Cream to the Shipping Station. Some of the larger creameries of the state have cream shipping stations where the cream is received and sampled. The creamery agent attending to this work is often, also, the agent of the railway station, or a store keeper, etc. Only in exceptional cases is the creamery represented at the shipping station by a competent creamery man. The result of this system of delivering cream is that the sampling of the cream may be seriously neglected. It is usually done by a boy or other helper of the station agent or store keeper. The cream as it is brought in by the farmers is insufficiently stirred, if stirred at all, and in many cases the sample is skimmed off the surface with a spoon and without any attempt to first make the cream uniform and homogeneous by proper stirring or pouring. That samples obtained in this way cannot be representative of the richness of the cream from which they are taken is obvious, and in most cases the creamery is the loser and the patron the gainer.

The Creamery Hauler Gathers the Cream at the Door of the Patron. The prevailing custom of cream delivery at the present writing is that of gathering the cream at the door of the patron by the creamery hauler. Where the hauler gathers the cream in indi-

vidual cans of the patrons, the sampling is done at the creamery or shipping station. In most cases, however, the hauler carries on his wagon large cans into which the cream from each patron is poured. The hauler samples and weighs the cream of each patron on the route. This throws the whole responsibility on the hauler; the creamery depends for its results on his competency, carefulness, conscientiousness and honesty. If he has the interests of the creamery at heart, is competent, conscientious and honest, well and good; if he lacks these qualifications, as is often the case, correct samples of the cream he gathers cannot be expected and, as a general rule, the creamery is the loser.

THE PATRON'S RESPONSIBILITY

The root of all the difficulties in securing representative samples lies in the lack of care the cream receives on the average farm. If the patron himself took proper care of his cream and made an effort to have it in proper mechanical condition, homogeneous in body, before the hauler, station agent or creamery samples it, the sample could not help being representative and the problem would be very largely solved. While many progressive and intelligent dairymen appreciate the importance of this and take pride in giving the cream the necessary care until it leaves the farm, the average patron takes little interest along these lines. This condition is largely due to ignorance, thoughtlessness and carelessness, as well as the fact that most creameries accept their patrons' contributions of cream in any shape or condition without protest. It is obvious that much improvement might result from educating the patrons on how to properly take care of their cream.

The hand separator should be so adjusted and operated as to deliver cream testing about 40 per cent. fat. After separation, the cream should be cooled and kept cool by setting the cans containing it in cold water. This will prevent its thickening due to souring. The cream should be stirred occasionally to prevent undue separation of the fat and the cream from drying on the surface. The cream should set in cold water both summer and winter. This will prevent its souring in summer and its freezing in winter. It should be delivered not less than twice a week in winter and three times in summer. Where it is sampled at the shipping station or creamery it should be taken there in cans of the proper size. Small quantities of cream in large cans cause the cream to churn in transportation, making the sampling exceedingly difficult. If the cans or pails are too full, the cream cannot be mixed readily before sampling. Proper attention by the creamery patron to these points would make possible, correct sampling of the cream under all reasonable conditions.

THE CREAMERY'S RESPONSIBILITY

Where the creamery depends on the hauler or shipping station agent to do the sampling, it should see to it that its haulers or agents are honest and conscientious, have the necessary knowledge to do their work right, and be supplied with an adequate equipment for sampling. Men of questionable character and men of careless habits never make reliable agents for taking cream samples. Their make-up lacks the foundation supporting conscientious work.

Men who are ignorant of the proper method of sampling cannot be depended upon to secure representative samples. They may do the work the best they know how, but they usually do not know how. They should, therefore, have definite instruction from the creamery. They should know the why of their work as well as the how, in order to do that work intelligently and take an interest in it.

The creamery should see to it that its agents have the necessary equipment for taking samples right. This equipment should consist of a spring scale, capacity 60 pounds, for weighing the cream; a weighing pail in which each farmer's cream is weighed separately; a combined stirrer and sampler properly constructed (see Fig. 6); a rubber scraper for scraping the cream from the sides and bottom of the farmer's pail or can and from the weigh pail after each weighing; a set of properly numbered sample bottles with tight stoppers or screw tops and arranged in a rack in numerical order; cans, preferably ten-gallon cans, into which to empty the weigh pail; and a cream report book. The cream should be thoroughly stirred with the stirrer, then poured into the weigh pail, weighed and sampled. The scales should not be held up by hand, but should be suspended from a stationary hook preferably attached to the rear of the wagon. After pouring the cream into the large can, the weigh pail should be thoroughly scraped with the rubber scraper, removing all the remnants of cream that adhere to the sides and bottom of this pail. The sample bottle, after filling, should be sealed tightly and returned to its place in the rack. In case the weigh pail does not hold all the cream of one patron, a separate sample should be taken from each weighing and the corresponding weights recorded.

Where the cream of each patron is sampled at the creamery, the same precautions should be observed. The mixing is best accomplished by pouring or stirring. In order to facilitate the pouring, to save time and to prevent unnecessary loss by spilling, a few straight walled cans with the tops entirely open should be provided. These cans should be large enough to easily take care of the contents of a ten-gallon can without overflowing. When the cans are not too full, thorough mixing is permissible by stirring, provided that a stirrer with a good sized disc and a stout rod not less than three feet long and with a good hand hold as illustrated in Fig. 6, be used. When

the cream is mixed by stirring, the stirring must be done thoroughly; simply giving the cream a few dips with the sample dipper is not sufficient. The stirrer must be worked to the bottom of the can several times and the entire contents of the can must be thoroughly agitated. Thick cream should be warmed until it pours readily; frozen cream should be warmed until the icy portions have completely disappeared. Churned cream cannot be sampled. Its fat content may be calculated by testing the buttermilk and estimating the amount of butter.

The use of cream sampling tubes, (cream thieves) cannot be recommended. The mechanical condition of most of the gathered cream is such that these contrivances are hindrances.

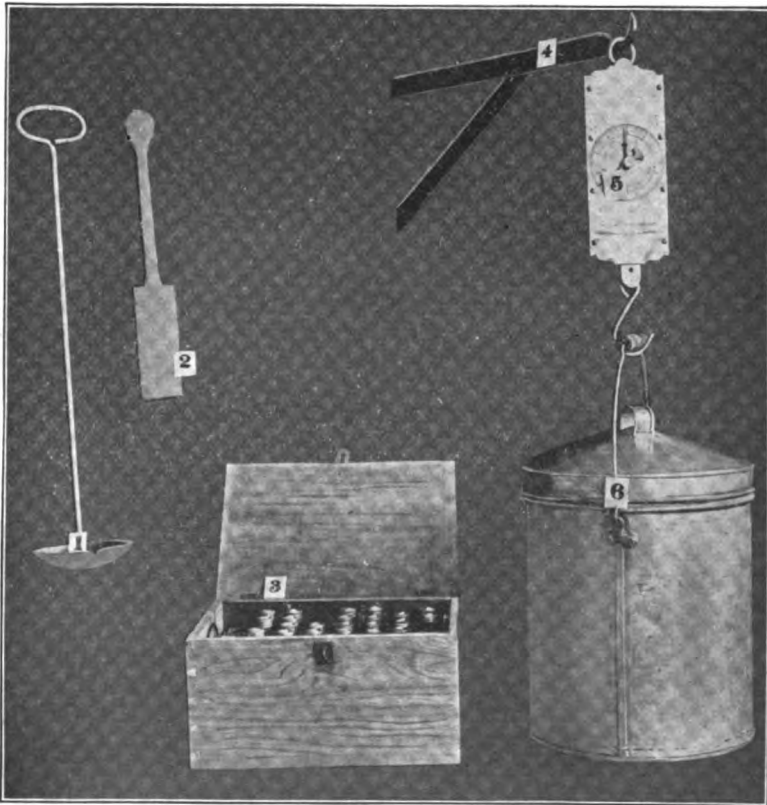


Fig. 6. Showing complete equipment of the cream hauler. No. 1 is the stirrer and sampler. It consists of a heavy iron rod to the bottom of which is securely attached the sampling disc. No. 2 is the rubber scraper used for scraping the weigh can and farmer's pail. No. 3 is the box holding the sample bottles. No. 4 is a firmly secured hook on which to suspend the weigh pail. No. 5 is a 60 pound capacity cream spring scale, and No. 6 is the weigh pail.

AMOUNT OF CREAM FOR THE SAMPLE

It is the general practice among creameries to make one test only of each sample. It is often desirable, however, to retest a sample in order to prove the accuracy of the first test, especially when there is an abnormal variation in the tests of two successive deliveries of cream from the same patron. Frequently bottles break in the tester and a second test is necessary to determine the per cent. of fat of the cream which the broken bottle represents. For these reasons it is advisable to take a sample large enough for two tests. Since 20 c.c. of cream are sufficient to make one test, the cream sample should contain about 40 c.c. or about one and one-half ounce.

Larger samples than this are not only not necessary, but they may cause the creamery considerable loss due to waste. This holds true, however, only where preservatives are used, as is especially the case with composite samples. Where single samples only are taken and these samples are tested on the day received, or the day following, the use of preservatives is unnecessary and the unused portion of the sample may be poured back into the cream vat to avoid loss.

THE CARE OF CREAM SAMPLES

After the samples are taken they must receive the proper care until the tester is ready for them. The reliability of the test depends just as much on the care of the samples as on the sampling itself. Ignorance of this factor is sure to defeat the good results of due attention to the sampling and to all other phases of the test.

In most gathered cream creameries, the cream samples are not tested on the day they are received. Where single samples are taken, the samples are often one or more days old before they are tested. Where composite samples are taken, the samples are usually held for one or two, and in some cases four weeks before they are tested. Few operators fully realize that, while these samples are waiting for the tester, they are susceptible to rapid deterioration and to changes in composition, which have a disturbing influence on the accuracy of the test. In many creameries the samples are allowed to remain on the shelves of the receiving platform without protection from exposure to air and to high temperatures. Careful observations have shown that there is a strong tendency on the part of cream samples to increase in per cent. of fat with age. This fact is due to the escape of moisture from the sample through evaporation. The chief factors controlling this evaporation are the tightness of the seal of the sample bottles and the temperature to which they are exposed. The extent to which the per cent. of fat may increase as the result

of tightness of seal and storage temperature is graphically illustrated by the results of the following experiment.

The daily shipments of cream from six patrons were sampled for single tests and for composite tests. Each patron's composite sample was divided among nine bottles. Three bottles were tightly sealed, three were loosely sealed and three were left open. One set of these bottles from each patron, i. e., one tightly sealed, one loosely sealed, one open, was placed in the ice box at a temperature of 50 degrees F., one set was left in the receiving room at temperatures ranging from 70 to 90 degrees F., and one set was placed near the boiler at a temperature of 90 to 110 degrees F.

The composite samples were two weeks old when tested. The results are shown in Table III.

TABLE III

Patrons	Fat tests of single samples July 18 to 27								Fat tests of composite samples held two weeks								
	July							Average	Ice box			Weigh room			Near boiler		
	18	15	17	20	22	24	27		Tight	Loose	Open	Tight	Loose	Open	Tight	Loose	Open
	%	%	%	%	%	%	%										
No. I....	55	51	53	52	51.5	50.5	53	52.1	51	54	56	57.5	59	66	58	58	70
No. II....	41	38	39	39	34.5	35.5	39	38	39.5	40	42	44	45	50	51	50.5	60
No. III....	28		27	29		26	30	27.8	27.5	28.5	30	34	35	37	31	34	68
No. IV....	40	37	38	40	37.5	39	37	38.3	37.5	38.5	41	38.5	39	46	41	41	65
No. V....	35	33	35	32.5	33	32.5	33	33.4	33	34	37	34	37.5	42	36	37	70
No. VI....	48	48	48	48	47	47	49	47.8	48	48	51	49	48	59	49	48	71
Average								39.5	39.5	40.5	43	43	44	50	44.5	46.5	69

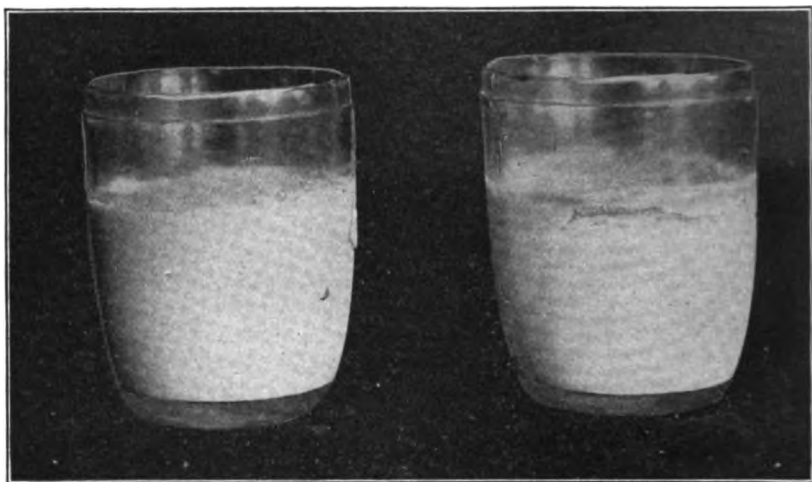


Fig. 7. Showing effect of storage temperature and seal on condition of cream sample. The jar on the right side represents a sample of cream kept in the receiving room for two weeks. The top of the cream is dry and tough, due to poor seal and high storage temperature. The jar on the left was properly sealed and stored in the refrigerator for two weeks. The cream is in reasonably good condition for testing

The figures in Table III can leave no doubt of the importance of the proper care of the cream samples. They show that a tight seal and low temperature will prevent evaporation entirely, so that the test is not altered. Exposure of the samples for two weeks to the receiving room temperature during summer caused sufficient evaporation to raise the test 3.5 per cent., even in bottles with a tight seal. When kept in loosely sealed bottles there was a rise of 1 per cent. in the test of the samples kept in the refrigerator and 4.5 per cent. in the test of the samples kept on the receiving platform. In open bottles the test of the samples in the refrigerator rose 3.5 per cent., and that of the samples on the receiving platform increased 10.5 per cent.

The significance of these results becomes more conspicuous yet when interpreted in dollars and cents, as shown in Table IV.

TABLE IV.—Effect of Improperly Kept Composite Samples on Creamery Receiving 20,000 Pounds Fat during Month of July

Place of storage	Fat per cent.	Av. single test	Increase in composite test per cent.	Pounds fat paid too much	Creamery lost dollars
Ice Box					
Tight seal	39.5		none	none	none
Loose seal	40.5		1.0	506	126.50
Open bottle	43.0		3.5	1772	443.00
Receiving Platform					
Tight seal	43.0	39.5	3.5	1772	443.00
Loose seal	44.0		4.5	2278	569.50
Open bottle	50.0		10.5	5316	1329.00

The above calculations are based on the business of an average sized creamery receiving about 20,000 pounds of fat per month. The loss of fat is figured on 39.5 per cent. cream, which is the average of the single-sample tests in this experiment. The price of fat is calculated at 25 cents per pound.

Where the sample is kept for two weeks in a tightly sealed bottle on the receiving platform, the increase in the test amounts to 1772 pounds of fat per month. At 25 cents per pound, the creamery is paying \$443.00 in one month for butter fat which it never received. If the sample is kept in a loosely sealed bottle, the creamery pays for butter fat not received, \$569.50.

A large number of our Indiana creameries are keeping their samples for two weeks before testing. Most of them leave them on the receiving platform, and some use bottles or jars with very imperfect seals. These figures suggest how, in these creameries, some of the overrun may be lost. They further show that these losses can be entirely prevented by either testing the samples on the day of the cream delivery or by sealing the bottles tightly and placing them in the ice box or refrigerator.

Since various styles of sample bottles are in use in the creameries, a brief experiment was conducted to determine the efficiency of the different types of bottles in most common use, such as jelly glasses with tin covers, milk bottles with paper caps, milk bottles

with metal caps, and Mason fruit jars. Single and composite samples were taken from the cream of four patrons. Eight composite samples of each patron were kept at about 85 degrees F. and eight composite samples were kept at 50 degrees F. Samples of the daily



Fig. 8. Showing different types of composite sample jars. The milk bottle with the metal cap proved most satisfactory

shipments of the respective patrons were added to the composites. At the end of one week all of the samples were tested with the following results:

TABLE V.—Showing Effect of Storing Cream Samples in Various Types of Sample Bottles and at Different Temperatures

Style of bottle	Average daily tests	Average composite tests		Difference	
		Cold storage 50° F.	Receiving room 85° F.	Cold storage	Receiving room
Jelly glasses	31.5	31.18	34.25	— .32	+2.75
Milk bottles with paper caps	31.5	31.56	35.25	+ .06	+3.75
Milk bottles with metal caps	31.5	31.25	33.12	— .25	+1.62
Mason jars	31.5	31.12	33.62	— .37	+2.12

The preceding table shows that the increase in the test was greatest where milk bottles sealed with paper caps were used; slightly less in jelly glasses with tin covers; still less in Mason jars and least in milk bottles with metal caps. These results are sufficient to show that milk bottles sealed with paper caps and jelly glasses sealed with tin lids are not safe to use. Their abandonment may save the creamery hundreds of dollars per month.

Bottles with ground glass stoppers form the most satisfactory seal, but are somewhat expensive. Cork stoppers of good quality form a tight seal, but have a tendency to loosen automatically. They are, for this reason, not so satisfactory for this purpose.

The increase in the test due to storing also varies with the amount of cream in the sample jar. With the size of the bottles unchanged, the smaller the amount of cream, the greater the increase in the per cent. of fat.

Aside from the increase of the test due to evaporation, the physical condition of the cream sample exposed to summer heat is so affected that it is exceedingly difficult to properly prepare the sample for the test. The fat rises to the top and separates into lumps of hard, dry cream, often covered with a tough growth of moulds. These lumps cannot be mixed back into the liquid without heating the sample sufficiently to dissolve the fat; or, the cream may whey off to the extent where testing becomes mere guesswork. The condition of the cream at the time the sample is taken further influences these undesirable changes during storage. Samples of thin, sour and fermented cream, especially such as gathered cream coming from gravity separators, deteriorate in storage much more rapidly and are less easily handled in the test than samples taken from sweet cream.

Samples which are not tested upon arrival at the creamery or soon after, should receive a small amount of preservative. Preservatives in tablet form, such as corrosive sublimate tablets, are more satisfactory than those in liquid form, since the use of the latter requires a correction of the reading of the test. Care must be taken that the tablets dissolve completely and that all of the cream in the bottle comes in contact with the solution. In order to accomplish this, the sample should be shaken by giving the bottle a rotary motion. In the case of composite samples, the bottle should be shaken after each new addition of cream until the mixture is uniform.

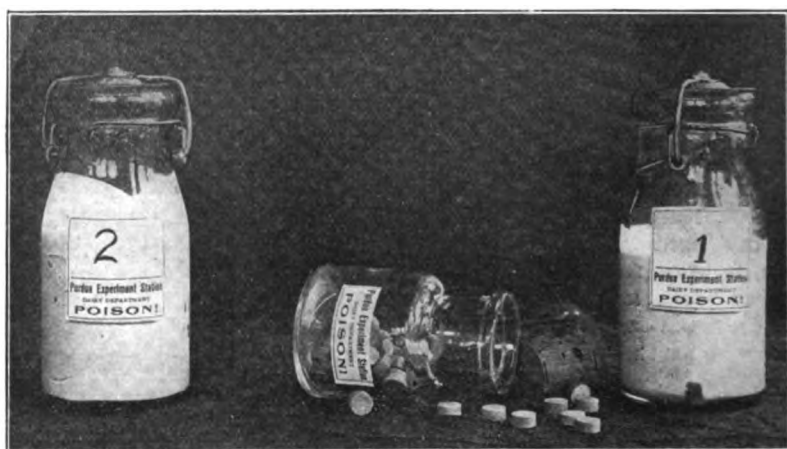


Fig. 9. Showing the use of preservative tablets. Unless the jar is shaken after the tablet has been added, the preserving agent does not mix with the cream, as shown in sample 1. Sample 2 was properly shaken, distributing the dissolved tablet throughout the cream. The solution of the tablet is facilitated by crushing the tablet before use

COMPOSITE SAMPLES

The taking, testing and paying on the basis of composite samples of the patrons' cream is a practice which cannot be too strongly condemned. The real advantages of this system are few, if there are any, and its disadvantages are legion.

In the first place the system of composite sampling violates the first and fundamental principle of sound and successful creamery management. Experience has shown that one of the most difficult problems of the gathered cream creamery is that of securing accurate samples of the patrons' cream. The make-up and characteristics of the average cream hauler or station agent are not such as to warrant the creamery in accepting his work without continuous, systematic and careful checking up. The inherent difficulty of securing accurate samples, combined with the lack of training, carelessness and weakness of character on the part of the average cream hauler, strongly tend to yield samples that are richer in fat than the cream from which they are taken. There is an unceasing tendency to a shortage of fat in the cream vats as compared with the fat recorded in the patrons' ledgers and calculated on the basis of the test of the individual samples taken by the hauler. Since the patrons are paid on the basis of the hauler's samples, the creamery is almost invariably the loser, paying for fat it did not receive.

If composite samples are taken and they are tested once per week, once in two weeks, or once per month only, the creamery has no check on the work of the haulers, until the composite samples are tested. In the meantime the difference between the amount of fat actually received and that calculated from the tests of the haulers' samples may have grown to such proportions that the creamery has to pay for hundreds of pounds of fat which never entered the factory, eating up the overrun and causing the creamery to run behind without knowing the cause of the shortage. These conditions, if continued, are bound to drive the creamery to the wall. The only successful and consistent way to stop these losses lies in the adoption of a system whereby a sample of the cream of each patron, from each delivery, is tested. This makes possible a comparison of the amount of fat as determined by the test and weight of each patron's cream with the amount of fat as determined by the test and weight of the hauler's load. Any considerable difference between these amounts will indicate inaccuracy in the work of the hauler. A conscientious hauler will endeavor to prevent the recurrence of this difference. The moral effect alone of this system is a mighty factor in increasing the hauler's efficiency.

The danger of increasing the test of the samples in storage, as discussed in the previous chapter, is another point that renders composite sampling undesirable and unsafe.

Furthermore, composite samples, in order to be representative, must consist of aliquot portions of the various lots of cream which they represent, that is, from a large shipment of cream a larger sample must be taken and added to the composite sample than from a small shipment. Unless this precaution is observed, the composite sample may not represent the average richness of the different lots of cream. The error is intensified by the variation in richness and amount of cream delivered. Daily variations in the richness of the cream from any given patron are usually accompanied by variations in the amount of cream of the same patron. This condition is due to the fact that variations in the richness of the cream are generally the result of changes in the cream screw or in the operation of the separator. Conditions that cause richer cream to come from the separator also cause the separator to yield less cream and vice versa. Unless aliquot samples are taken, the creamery is almost sure to pay for more fat than it receives. This is best illustrated in the following example:

	Cream delivered	Test	Fat
May 1	200 pounds	20 per cent.	40 pounds
May 2	100 "	40 "	40 "
	300 pounds	Average 30 per cent.	80 pounds

The total amount of cream delivered is 300 pounds, containing 80 pounds of fat. If equal amounts of cream are taken for the composite sample from each delivery, the composite sample will test 30 per cent. and the calculated amount of fat will be $\frac{300 \times 30}{100} = 90$

pounds of fat. The creamery actually receives from this patron 80 pounds of fat, but it pays him for 90 pounds of fat, or for 10 pounds of fat more than it received. If the cream of the next shipment were poorer in fat than the first one and the amount of cream delivered were larger, as is usually the case, the result would be the same. The patron would again receive payment for more fat than he delivered.

On the other hand, if both the amount and richness of the cream of the succeeding shipment increased, the result would be the opposite, as shown in the example below:

	Cream delivered	Test	Fat
May 1	100 pounds	20 per cent.	20 pounds
May 2	200 "	40 "	80 "
	300 pounds	Average 30 per cent.	100 pounds

The total amount of cream delivered in the two shipments is 300 pounds, containing 100 pounds of fat. If equal amounts of cream are taken for the composite sample from each delivery, the composite sample will test 30 per cent. fat and the calculated amount of fat will be $\frac{300 \times 30}{100} = 90$ pounds of fat. The creamery in this case receives

100 pounds of fat, but pays for only 90 pounds of fat. The patron gets paid for 10 pounds of fat less than he delivered.

The above examples leave no doubt as to the need of taking aliquot portions for the composite sample. In order to do this the cream must be carefully measured, but, the mechanical condition of the cream is often such that the measuring of an exact sample is very difficult, if not impossible. As a general rule, the sampling tubes that work satisfactorily enough with milk cannot be used to advantage with cream. The only instrument that offers at least a semblance of practical use for measuring the composite sample, is the composite test gauge. It consists of a piece of brass about one-half of an inch wide and as long as the sample jar. It is graduated on both edges into divisions which represent the amount of cream that should be taken from the lot of cream to be sampled. This gauge is attached to the sample jar while the sample is taken. The cream is added to the jar until it rises to the graduation representing the number of pounds of cream delivered.

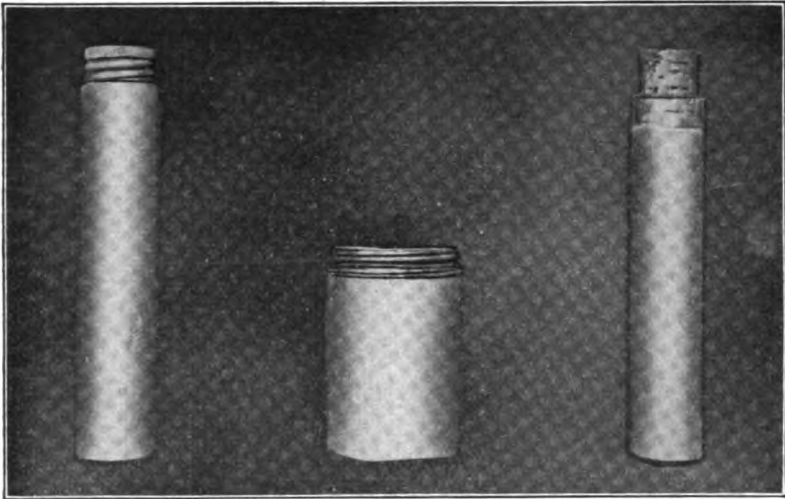


Fig. 10. Showing satisfactory types of sample bottles for single-sample testing

The only redeeming feature of the composite system of cream sampling lies in the fact that it greatly reduces the tedious work and cost of testing. In consideration of the many and fatal defects of composite sampling as discussed above, it is obvious, however, that the extra labor and expense incurred by individual testing is infinitesimal as compared with the enormous losses which the creamery may suffer as the result of composite sampling.

This fact has been appreciated in recent years by many creameries, especially by the large centralizing plants. Most of these large creameries have entirely abandoned the composite sample system and have permanently adopted the practice of testing each shipment of cream individually. In the state of Indiana, however, the majority of the creameries are still using the composite sample method. It is to be hoped that their contact with the information offered in this bulletin may help them to appreciate the need of improvement along this line for the permanent benefit of their business.

PREPARATION OF THE CREAM SAMPLES FOR THE TEST

Samples of fresh cream in which the fat is not perceptibly separated and which are not wheyed off, can be tested accurately without special preparation, other than giving the samples a rotary motion or carefully pouring the cream before use. Thick and semi-solid

cream samples which are otherwise in good condition, such as is the case with samples stored at a low temperature, are best warmed to about 85 or 90 degrees F., then poured gently and weighed out at once. Heating to higher temperatures is unnecessary and unsatisfactory, owing to the rapid and complete separation of the melted fat, rendering the weighing out of an accurate sample difficult. Heating to high temperatures should be practiced as a last resort only. Cream samples in which the butter fat is completely separated, churned, or has formed a compact, tough and leathery layer, as is the case with composites not stored at a low temperature, should be heated high enough to melt the butter fat, 110 degrees F. or above; then shaken thoroughly and cooled to about 60 degrees F. or below while continuously shaking, then weighed out at once. If not cooled and shaken while cooling, the fat separates so rapidly that no fair sample can be taken. This is especially true of cream with a high per cent. of fat.

The Vermont Station in Bulletin No. 100, recommends the pouring of lumpy cream through a fine sieve, and to press the lumps through with the fingers.



Fig. 11. Showing rapid separation of melted fat in churned sample which has been heated to 110 degrees F. The fat comes to the top in the bottle and the pipette before the cream can be transferred to the test bottle. The cream should be cooled to 60 degrees F. and shaken while cooling to prevent this separation

MEASURING OR WEIGHING FOR THE TEST

The amount of cream needed in the Babcock test is 18 grams, or a fraction thereof. Cream is exceedingly variable in composition and specific gravity. A given volume of one sample of cream may, therefore, weigh considerably less or more than the same volume of another sample of cream. For this reason 18 grams of cream cannot be expressed in volume unless the specific gravity of the cream is known. Since the specific gravity of cream is not known and cannot be readily determined in the creamery, the only means of using the correct amount of cream in the test is that of weighing out 18 grams or a fraction thereof. Furthermore, the mechanical condition of the cream makes its rapid and complete delivery from the pipette difficult, considerable and varying amounts of cream sticking to the walls of the pipette.

The use of an 18 c.c. pipette instead of accurate cream scales is a makeshift and the results are unreliable. The richer the cream, the greater is the error. With 50 per cent. cream the error may be as great as 10 per cent., the patron being the loser.

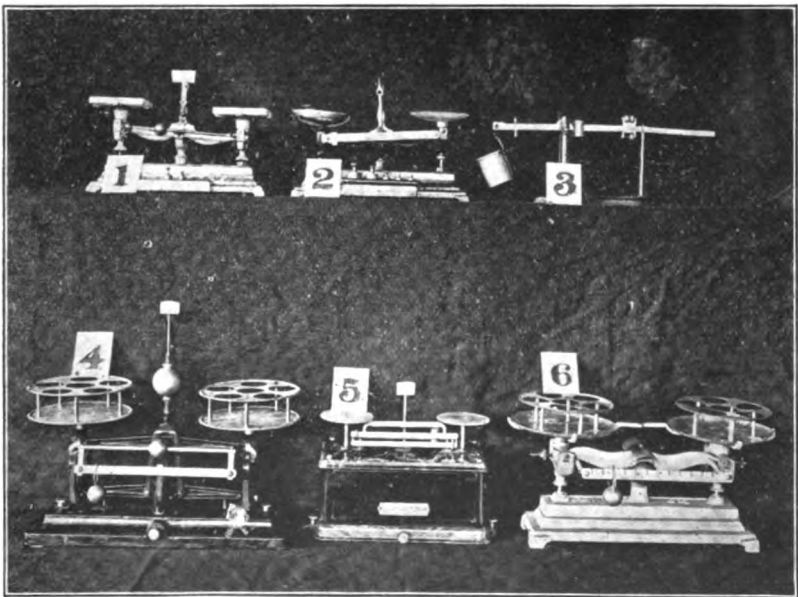


Fig. 12. Showing different types of balances used for weighing the cream. Nos. 2 and 4 gave the best satisfaction. No. 5 is an excellent scale for moisture tests of butter, but is not heavy enough for weighing cream. The cream balance should be sensitive, should rest on a level table and should be kept in good working order

While the use of the 18 c.c. pipette in the Babcock test of cream is being abandoned more and more, there are still many creameries in this state which adhere to it. This is especially the case with creameries receiving largely milk and only a small amount of cream.

Where cream is bought and paid for on the butter fat basis this practice should be prohibited by law.

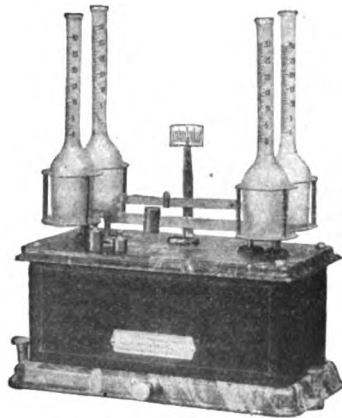


Fig. 13. Showing a balance similar to No. 5 in Fig. 12, the difference being that it is built especially for the weighing of cream. It is a very satisfactory balance

AMOUNT OF ACID AND TEMPERATURE OF ACID AND CREAM

The amount of acid to be added must vary with the richness of the cream and the temperature of the acid and the cream. While it is generally conceded that less acid is needed for rich cream, the range in the amount of acid used, that gives satisfactory results, is wide.

Where cream and acid are at room temperature, about 70 degrees F., a good test can be obtained by using acid with a specific gravity of 1.83 in amounts not to exceed the following limits:

						Amount of acid	
						Max	Min.
Cream testing about	50	per cent.	fat	18	gr. charge	13.0 c.c.	8.0 c.c.
"	"	"	50	"	" 9 "	7.5 c.c.	4.5 c.c.
"	"	"	28	"	" 18 "	15.0 c.c.	11.0 c.c.
"	"	"	28	"	" 9 "	8.0 c.c.	5.0 c.c.

It is important that the vessel containing the sulphuric acid be kept tightly closed, as the acid weakens very quickly when left exposed to the air, due to taking up moisture.

In the preceding experiments acid of 1.83 specific gravity was used; temperature of cream and acid was about 70 degrees F.; acid and cream were thoroughly shaken as soon as the acid had been added.

Since the richness of cream is not known at the time the acid is added, the most satisfactory guide indicating the amount of acid needed is the color of the mixture of acid and cream. Add acid until, when properly shaken, the mixture has a color similar to that of coffee after cream has been added.

Ninety-six tests with cream and acid at temperatures ranging from 40 to 110 degrees F. showed no visible changes in the per cent. of fat and the clearness of the test, where the amount of acid used was governed by the color of the mixture. Where the amount of acid was not regulated by the color of the mixture, but where the same amount of acid was used at all temperatures, the resulting tests varied widely. In the case of cream and acid at 40 degrees F., it required more shaking to effect complete action of the acid on the cream, but the tests were clear and the per cent. of fat correct. In the case of cream and acid at 100 degrees F. or above, the tests were very dark and charred, and the meniscus difficult to read.

ONE OR TWO ADDITIONS OF WATER

Experiments to determine the effect of one and two additions of water on clearness and accuracy of the test showed the following results:

TABLE VI

Number of tests	Number of additions of water	Test	Gravimetric fat estimation	Difference
48	two additions	28.53	28.51	.02
48	one addition	28.68	28.51	.17

The average of the tests with two additions of water practically agreed with the gravimetric fat estimation. The average of the tests with one addition of water was .17 per cent. higher than the gravimetric fat estimation.

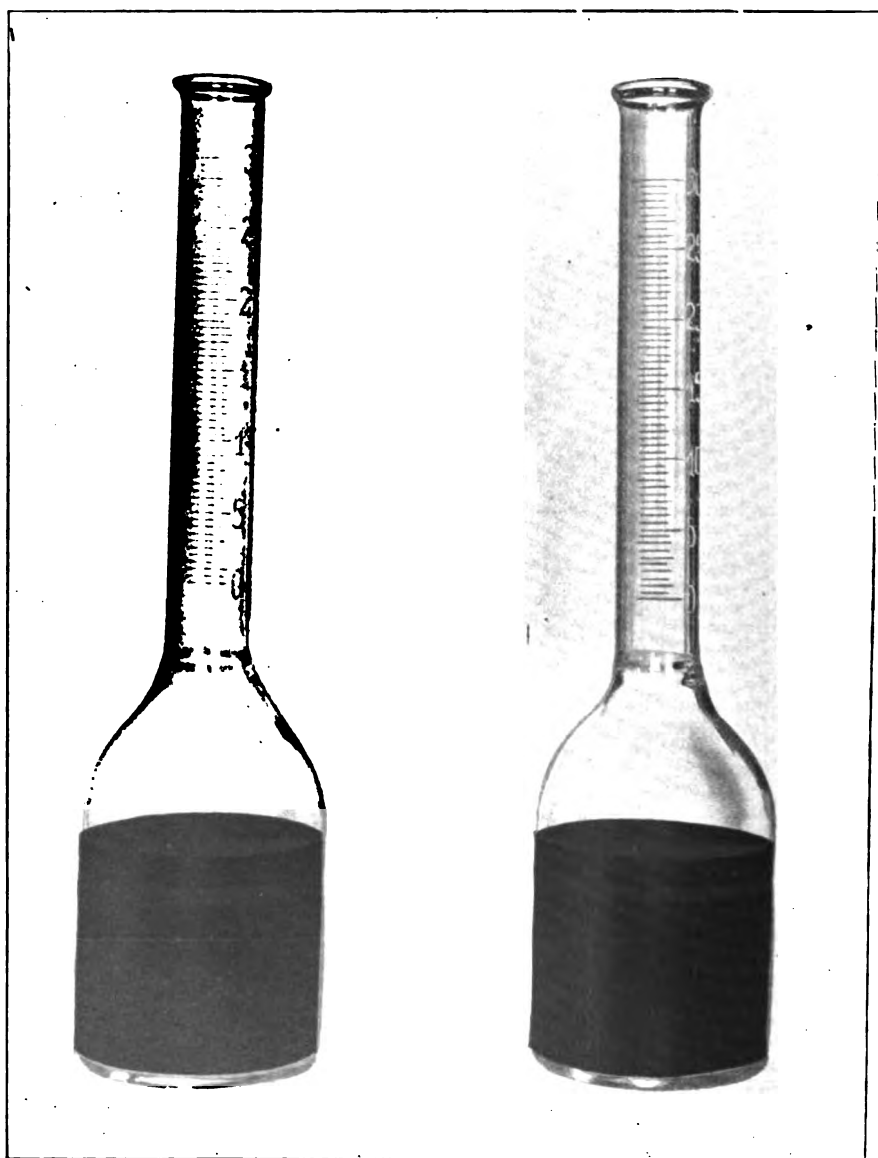


Fig. 14. Showing the desired color immediately after the acid has been added and the mixture shaken. Enough acid has been added when the mixture of cream and acid has the color of coffee with cream in it

With two additions of water, the maximum deviation from the gravimetric fat estimation was .33 per cent., the minimum deviation was —.1 per cent. With one addition of water the maximum deviation from the gravimetric fat estimation was .8 per cent., the minimum deviation was .04 per cent.

While the average of the tests with one addition of water deviated but very slightly from the gravimetric fat estimation, the results were much less uniform than in the case of two additions of water; the bottom line of the fat column was often ragged and not well defined, and the liquid below was not clear.

The abbreviation of the test by adding water once only cannot be recommended, therefore.

THE SPEED OF THE TESTER

Dr. Babcock found that, in a tester with a wheel 18 inches in diameter, it was necessary to give the bottles 700 to 800 revolutions in order to secure the maximum separation of fat. The force exerted by this ratio of diameter to speed served as a basis upon which the required speed of machines with a wheel of more or less diameter

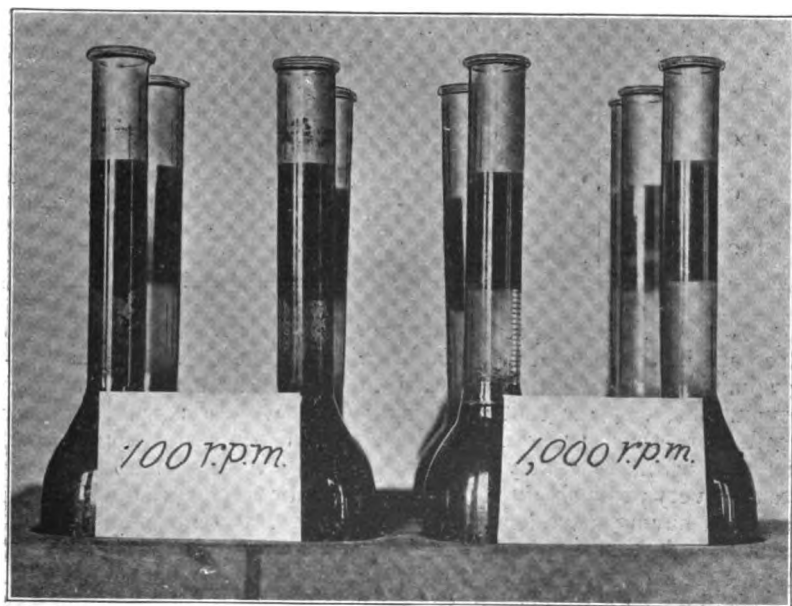


Fig. 15. Showing effect of 100 and 1000 revolutions per minute on the compactness and clearness of the fat column

was calculated. The results of these calculations are tabulated in "Testing Milk and Its Products," by Farrington and Woll.

Experience among creameries has amply shown that, in many instances operators pay little attention to the speed of the tester, so that, frequently, the machines are run decidedly below the required speed. This has naturally lead to the conclusion that, in tests thus made, the separation of fat must be incomplete and the per cent. of fat low. It was, therefore, thought important to determine the resulting error experimentally. A series of 547 tests was made in an 18 inch tester. The speed used varied from 100 to 1000 revolutions per minute with the following results:

TABLE VII.—Showing Effect of Speed of Tester on Accuracy of Test

Speed	Number tests	Reading at 140° F.	Chemical analysis	Difference
1000	355	19.52	19.53	— .01
800	36	23.76	23.87	— .11
600	72	23.71	23.87	— .16
400	24	24.88	25.23	— .35
200	24	24.37	24.40	— .03
100	24	23.19	23.26	— .07

A reduction of speed from 1000 to 400 revolutions caused a decrease in the test of .34 per cent. fat. The decrease was very gradual; 1000 revolutions yielded .1 per cent. fat more than 800 revolutions, .15 per cent more than 600 revolutions, and .34 per cent. more than 400 revolutions; 200 and 100 revolutions raised the test again to nearly that with 1000 revolutions. The latter result is very probably due to the fact that the tests were quite curdy, the curd having a tendency to increase the fat column. Later experiments further showed that insufficient speed of the tester caused the fat column to contain considerable quantities of acid and water.

While the decrease in the speed did not lower the tests as much as was expected, the tests at low speed were unsatisfactory. There was a wider variation between duplicates, and the reading was often dif-

ficult. The fat column was not as compact as where full speed was applied and there were visible indications of fat in the liquid below. The small difference between tests at high and low speed is probably due to the fact that the greater loss of residual fat in the case of low speed was offset by a corresponding increase of the impurities in the fat column. The result suggested strongly that, for correct and uniform results, the tester must be run at the proper speed.

READING THE TEST

Experience has shown that correct reading is the most difficult part of the entire test. Results of careful experimental data concerning the proper reading of the cream test are very meager, and those available are, at best, irregular and often contradictory. The only work of really systematic and consistent experiments published is reported by Webster,¹ and here, too, the results cover experiments with a comparatively small number of tests.

Since such factors as temperature, residual fat, style of bottles and other factors heretofore not considered, render consistent and systematic experiments concerning the correct reading of the test difficult, if not impossible, it was necessary to first make tests with pure butter fat of known weight, eliminating as many of these disturbing and changeable phenomena as possible.

A series of 26 test bottles, 18 gram 50 per cent., 18 gram 40 per cent. and 9 gram 50 per cent. bottles, was filled to the necks of the bottles with water and weighed on analytical balances. Pure butter fat was separated from fresh and pure butter, and varying amounts of this pure fat were then added to these test bottles. A second weighing was made to accurately determine the exact weight of the butter fat added in each case. The correct reading was then calculated for each bottle as follows:

$$18 \text{ gram bottles } \frac{\text{grams butter fat}}{18} \times 100$$

$$9 \text{ gram bottles } \frac{\text{grams butter fat}}{9} \times 100.$$

These bottles were then whirled in the tester at full speed and the tests were read at 135 to 140 degrees F., this being the temperature at which pure butter fat has a specific gravity of .9. The results yielded the following averages:

¹U. S. Bureau of Animal Industry Bulletin No. 58, 1904

Calculated per cent. fat	26.66 per cent.
Reading to top of meniscus	27.52 " "
Reading to bottom of meniscus	26.49 " "

With two exceptions the meniscus amounted to exactly 1 per cent. In two 9 gram 50 per cent. bottles the meniscus was 1.25 and 1.5 per cent., respectively.

The difference between the averages of the calculated per cent. of fat and those to the bottom meniscus was .17 per cent. or one-sixth part of the average meniscus. Unfortunately, however, the results were not as uniform as might have been desired, the averages given should, therefore, be accepted conservatively.

The same experiment was repeated, but instead of using pure butter fat, the fat from the necks of the bottles of the ordinary cream tests was weighed into the bottles. The results averaged as follows:

Calculated per cent. fat	24.87 per cent.
Reading to top of meniscus	24.90 " "
Reading to bottom of meniscus	23.60 " "

The meniscus varied from 1 to 1.5 per cent.; in one case it was 2 per cent.; it averaged 1.32 per cent. There was a difference between the bottom reading and the calculated per cent. of fat of 1.27 per cent. The reading to the top of the meniscus practically averaged the same as the calculated per cent. of fat. Here again the individual results lacked uniformity; nevertheless, a comparison between these averages and those obtained from the experiment with pure butter fat shows unmistakably that the fat column of the ordinary cream test is not pure butter fat, but contains sufficient impurities to deserve notice.

Heretofore, the only disturbing factor that was at all considered was the residual fat, and it was assumed that the residual fat amounted to from .2 to .3 per cent. With the appearance of this new element of error, the probable impurities of the fat in the test causing an increase of the test greatly exceeding the supposed loss of the residual fat, the whole problem becomes still more complex.

IMPURITIES IN THE FAT COLUMN OF THE TEST BOTTLE

The results of experiments to determine the extent of impurities contained in the fat column of cream test bottles are tabulated in Table VIII.

The per cent. impurities was determined as follows: as soon as the Babcock test was completed, from 1 to 2 grams of fat were drawn with the pipette from the neck of each test bottle. In order to guard against any possibility of admixture of liquid below the fat column, a layer of at least one-half inch of fat was left in the neck of the bottle. The fat removed was weighed on a fat-free filter paper, dried and placed in a S. & S. thimble, containing from 1 to 2 grams of dried calcium carbonate. This precaution was taken

to prevent possible disturbing influences on the part of the sulphuric acid. The coil and thimble were extracted with anhydrous ether for four hours. The fat was weighed and the per cent. of impurities was calculated from the difference between the weight of the fat thus estimated and the original weight of the fat from the test bottles. The per cent. of error of reading the test (per cent. over-reading) was calculated by multiplying the per cent. of impurities by the per cent. of fat contained in the cream and dividing the product by 100.

The impurities of the fat column were found to consist of acid and water in varying proportions.

TABLE VIII.—Showing Impurities Contained in Fat Column of the Babcock Test and Resulting Error in Reading the Test

Sample of cream	Babcock test per cent.	Analysis of fat column		Calculation of error of reading due to impurities	Error of reading
		Per cent. fat	Per cent. impurities		
1	50.78	98.90	1.10	$\frac{50.78 \times 1.10}{100}$	.56
2	40.25	98.87	1.13	$\frac{40.25 \times 1.13}{100}$	.45
3	33.77	98.63	1.37	$\frac{33.77 \times 1.37}{100}$	.46
4	23.01	98.77	1.23	$\frac{23.01 \times 1.23}{100}$	.28
5	44.18	98.15	1.85	$\frac{44.18 \times 1.85}{100}$	.82
6	40.27	98.25	1.75	$\frac{40.27 \times 1.75}{100}$	.70
7	34.04	98.83	1.17	$\frac{34.04 \times 1.17}{100}$	.40
8	31.69	98.94	1.06	$\frac{31.69 \times 1.06}{100}$	.33
9	29.60	98.70	1.30	$\frac{29.60 \times 1.30}{100}$	.39
10	44.80	98.19	1.81	$\frac{44.80 \times 1.81}{100}$	.81
Average	37.24	98.62	1.38		.52

Table VIII shows that the fat column in all the tests of the 10 samples of cream under experiment contained impurities. The per cent. of pure butter fat ranged from 98.15 to 98.94, averaging 98.62. The per cent. of impurities varied from 1.06 to 1.85, averaging 1.38

per cent., and the error in the reading of the test due to these impurities fluctuated between .28 and .81 per cent., averaging .52 per cent. The chief factor of variation in the reading, of course, was the richness of the cream. Other things being equal, the richer the cream, the larger the error.

The impurities of the fat column, however, showed also very marked fluctuations. These variations were irregular and did not seem to be affected by the richness of the cream. They suggested that there must be other important factors influencing the presence and extent of impurities in the fat column.

EFFECT OF AMOUNT OF ACID USED IN THE BABCOCK TEST ON THE PER CENT. OF IMPURITIES OF THE FAT COLUMN

Since the impurities in the fat column of the test bottle consisted partly of acid, it was reasonable to assume that the amount of acid used in the test might be one of the factors controlling their presence. Accordingly, a sample of cream was weighed into eighteen 9 gram 50 per cent. test bottles. These bottles were divided into divisions of six bottles each. Each division received a different amount of acid. The entire lot of 18 bottles was tested in the same machine and under normal conditions, with the following results:

TABLE IX.—Showing Effect of Amount of Acid Used on the Per Cent. of Impurities of the Fat Column and on the Resulting Error of Reading

Amount of acid used	Gravimetric fat estimation per cent.	Analysis of fat column		Calculation of error of reading due to impurities	Error of reading
		Per cent. fat	Per cent. impurities		
7 c.c.	32.33	98.46	1.54	$\frac{32.33 \times 1.54}{100}$	.50
14 c.c.	32.33	79.33	20.67	$\frac{32.33 \times 20.67}{100}$	6.68
5 c.c.	32.33	98.61	1.39	$\frac{32.33 \times 1.39}{100}$	.45

Table IX shows the effect on the impurities of the fat column of using^a different amounts of acid. The results can leave no doubt that an increase in the amount of acid above normal, causes a decided increase in the per cent. of impurities and, therefore, in the resulting error. Where 14 c.c. of acid were used, the impurities rose to 20.67 per cent., with a consequent error of reading of 6.68 per cent. It is important, therefore, that the amount of acid used be regulated as recommended in the chapter discussing the proper amount of acid for the test.

**EFFECT OF DEGREE OF HEAT AND MOISTURE IN THE TESTER ON
THE PER CENT. OF IMPURITIES OF THE FAT COLUMN**

Besides acid, the impurities of the fat column consist of water. It is obvious that this water is largely carried up into the neck of the test bottle from the liquid below with the fat, and that some of it may come from the hot water added between whirlings. Heretofore, it was assumed, however, that the centrifugal force was sufficient to remove this water, leaving largely pure butter fat in the neck of the bottle. It is possible, also, that the condensation of free steam in the tester may find its way into the bottles. Since this condensation may continue throughout the test, the water found in the fat column may be, in part at least, due to this factor. In order to determine this, two series of 16 tests each were made. One-half of the test bottles of each series was placed in a steam heated turbine tester, the other half was tested in a hand tester. All conditions, such as temperature and amount of acid and cream used, number of revolutions, duration of whirling and temperature of water added, were the same. The only difference was that the steam turbine was charged with live steam from beginning to end of the test, while the hand tester was cool and dry. The results are shown below.

**TABLE X.—Showing Effect of Degree of Moisture and Heat in Tester
on the Per Cent. of Impurities of the Fat Column
and Resulting Error of Reading**

Tester used	Gravimetric fat estima- tion per cent.	Analysis of fat column		Calculation of error of reading due to impurities	Error of reading
		Per cent. fat	Per cent. impurities		
Steam turbine					
Sample 1	53.46	98.18	1.82	$\frac{53.46 \times 1.82}{100}$	.97
Sample 2	53.21	98.72	1.28	$\frac{53.21 \times 1.28}{100}$	.68
Average	53.34	98.45	1.52		.81
Hand tester					
Sample 1	53.46	98.51	1.49	$\frac{53.46 \times 1.49}{100}$	.80
Sample 2	53.21	98.40	1.60	$\frac{53.21 \times 1.60}{100}$	.85
Average	53.34	98.46	1.55		.83

Table X shows that the difference in the impurities of the fat column between tests from a hot and moist tester and those from a cool and dry tester is no greater than the variations in the impurities of the fat column of tests from the same tester. The conclusiveness of these results is intensified by the fact that extremes of temperature and moisture were applied in the above experiments.

LOSS OF RESIDUAL FAT

It is generally understood that a small portion of the fat of milk or cream does not rise into the neck of the test bottle, but remains in the liquid below and is, therefore, lost in the test. This is called the residual fat. It is assumed to amount to .2 to .3 per cent.

There are two sources of residual fat, namely, that which adheres to the glass of the test bottles and that which is contained in the liquid below the fat column. The results of determinations of the residual fat in 26 series of cream tests are shown in Table XI.

The per cent. of residual fat tabulated below was determined as follows: six test bottles were used for each determination. The necks of the bottles were removed by scratching with a file and breaking them off at their base. The contents of the bottles were transferred to 500 c.c. beakers. The empty bottles were rinsed with hot water and the rinsings added to the solution in the beakers. This solution was then neutralized with potassium hydroxide, care being taken to avoid excessive evolution of heat. The neutralized solution was then slightly acidified to hasten the filtration and also to convert any soluble soap that may have formed into insoluble acid. The liquid was filtered through a wetted fat-free filter paper and the residual fat washed with distilled water. The filter paper was dried, extracted with ether and weighed in the usual way. The results multiplied by $\frac{100}{18}$ represent the per cent. residual fat in the liquid.

The test bottles after rinsing with hot water, were dried and rinsed with ether. The rinsings were evaporated and the fat weighed. The results multiplied by $\frac{100}{18}$ yield the per cent. residual fat adhering to the glass.

TABLE XI.—Showing Per Cent. of Residual Fat in Twenty-six Cream Tests

Babcock test of cream Per cent. fat	Per cent. residual fat		Per cent. total residual fat
	Adhering to glass	In liquid portion	
50.78	Not estimated separately		.28
40.25	" "	"	.34
33.77	" "	"	.30
23.01	" "	"	.33
44.18	" "	"	.26
40.27	" "	"	.28
34.04	" "	"	.34
31.69	" "	"	.33
29.60	" "	"	.26
44.80	" "	"	.29
60.00	.043	.235	.278
60.00	.043	.200	.243
29.00	.063	.235	.288
29.00	.024	.205	.229
Not determined	.030	.320	.350
"	.030	.210	.240
"	.030	.210	.240
"	.030	.200	.230
"	.030	.250	.280
"	.030	.230	.260
"	.050	.230	.280
"	.050	.210	.260
"	.050	.220	.270
"	.050	.240	.290
"	.050	.250	.300
"	.050	.170	.220
Average	.041	.226	.280

Table XI expresses the results of 26 separate samples of cream. Twelve tests were made of each sample. About four-fifths of the residual fat were found in the liquid portion and one-fifth of the residual fat adhered to the glass of the test bottles.

The residual fat contained in the liquid below the fat column ranged between .17 and .32 per cent., averaging .226 per cent. The residual fat adhering to the glass of the test bottles varied within the limits of .024 and .063 per cent., averaging .041 per cent. The total residual fat fluctuated between .229 and .38 per cent., averaging .28 per cent.

The results represent cream tests made under normal conditions. In the succeeding chapters an attempt is made to show the effect on the per cent. of residual fat of such factors as richness, condition and amount of cream used, amount of acid used and speed of the tester.

EFFECT OF THE RICHNESS OF CREAM, STYLE OF TEST BOTTLE AND SIZE OF CHARGE ON PER CENT. OF RESIDUAL FAT

Samples of cream widely varying in richness, (containing 29 and 60 per cent. fat, respectively), were used. The tests were made in 9 gram and in 18 gram 50 per cent. cream test bottles and the charges were 9 grams and 18 grams of cream, respectively. The results are shown in Table XII.

TABLE XII.— Showing Effect of Richness of Cream, Style of Test Bottle and Size of Charge on Per Cent. of Residual Fat

Cream test per cent. fat	Style of bottle	Size of charge grams	Residual fat per cent.
29	9 gram 50% 6 inch	9	.283
29	9 " " " "	9	.323
29	9 " " " "	9	.287
29	18 " " " "	18	.234
29	18 " " " "	18	.224
60	9 " " " "	9	.313
60	9 " " " "	9	.243
60	18 " " " "	18	.263
60	18 " " " "	18	.254
60	18 " " " "	18	.213
Average for 29 per cent. cream			.270
Average for 60 per cent. cream			.257
Average for 9 gram bottle			.290
Average for 18 gram bottle			.238

The figures in Table XII suggest that the richness of the cream has no appreciable effect on the per cent. of residual fat. The variations are well within the limits of the probable error.

There seems to be a tendency toward a slightly higher per cent. of residual fat in tests with a 9 gram charge than with an 18 gram charge, but the difference between the two is not great enough to be of much consequence.

EFFECT OF CONDITION OF CREAM ON PER CENT. OF RESIDUAL FAT

For this experiment the samples were taken from two lots of cream varying widely in per cent. of acid. The sweet cream was secured direct from the separator which was fed with freshly drawn milk. The sour cream contained about .4 per cent. lactic acid. Table XIII shows the results of this experiment.

TABLE XIII.—Showing Effect of Condition of Cream on Per Cent. of Residual Fat

Per cent. of residual fat	
Sweet cream	Sour cream
.28	.35
.26	.24
.27	.24
.29	.23
.30	.28
.22	.26
Average .27	.263

According to the results in the above table, the condition of the cream has no noticeable effect on the per cent. of residual fat. The differences between sweet and sour cream were no greater than the variations between different samples of the same cream.

EFFECT OF AMOUNT OF ACID USED IN THE TEST ON THE PER CENT. OF RESIDUAL FAT

To six 9 gram 50 per cent. 6 inch bottles, each containing cream from the same vat, 5, 7 and 14 c.c. of sulphuric acid were added and the Babcock test completed in the usual way. The results averaged as follows:

	5 c.c. acid	7 c.c. acid	14 c.c. acid
Residual fat	.74 per cent.	.51 per cent.	1.14 per cent.

It is evident from the above figures that extremes of acid tend to increase the per cent. of residual fat. Both, where more and where less than the normal amount of acid was used the per cent. of residual fat was unusually high. The proper amount of acid was determined by the color of the mixture of acid and cream as described on pages 358 and 359, and was found to be 7 c. c.

EFFECT OF SPEED OF TESTER ON PER CENT. OF RESIDUAL FAT

Since the centrifugal force evolved by the revolving bottles in the tester is instrumental in and essential for complete separation of the fat, it is evident that the rate of speed used exerts a strong influence on the per cent. of residual fat. The lower the speed, the less complete is the separation of the fat and the greater, therefore, is the per cent. of residual fat. Table XIV shows the extent to which the speed controls the per cent. of residual fat.

TABLE XIV.—Showing Effect of Speed of Tester on Per Cent. of Residual Fat

Per cent. residual fat	
At 1000 revolutions per minute	At 250 revolutions per minute
.37	1.10
.17	.41
.17	1.23
.19	.59
.24	.26
	1.65
Average .228	.873

The results in Table XIV show that the speed of the tester exerts a marked influence on the per cent. of residual fat. The amount of residual fat lost where the tester was run at 250 revolutions per minute was extremely irregular. It fluctuated from .26 to 1.65 per cent. and averaged .873 per cent. Where the bottles revolved at the rate of 1000 revolutions per minute, the variations were not so marked and the residual fat averaged only .228 per cent.

LOSS OF VOLATILE FATTY ACIDS

Aside from the loss of fat in the cream test due to the residual fat, it was thought possible, if not probable, that a part or all of the volatile fatty acids may escape, due to the action of the sulphuric acid on these less stable fats. While, in the Babcock test with milk, this loss would be exceedingly small, with cream it may become a factor deserving attention. Pure butter fat contains about 6 to 12 per cent. volatile fatty acids. If all of these fatty acids were lost in the Babcock test, there would be an error of 3 to 6 per cent. of fat in 50 per cent. cream. It seemed justifiable, therefore, to determine this factor experimentally.

The Reichert-Meissl Number was determined, both, of the pure fat from the cream by churning, melting and filtering, and of the fat from the Babcock tests by removing a portion of the fat column from the test bottles. In the calculation of the per cent. of volatile fatty acids based on the Reichert-Meissl Number, the molecular weight of the volatile fatty acids used was 133. The volatile fatty acids distilled over were estimated to be 87 per cent. of the total volatile acids present. The results of this experiment are shown in Table XV.

TABLE XV.—Showing Per Cent. of Volatile Fatty Acids Lost in the Babcock Test and Resulting Error of Reading

Sample of cream	Cream per cent. fat	Reichert-Meissl Number			Loss of volatile fatty acids percent.	Calculation of error due to loss of volatile fatty acids	Error of reading Babcock test per cent.
		In pure fat of cream	In fat column of test	Difference			
1	44.24	30.52	29.03	1.49	.455	$\frac{44.24 \times .455}{100}$	.20
2	40.27	30.42	28.50	1.92	.587	$\frac{40.27 \times .587}{100}$	.24
3	34.04	30.26	29.80	.46	.141	$\frac{34.04 \times .141}{100}$	.05
4	31.69	30.33	29.04	1.29	.394	$\frac{31.69 \times .394}{100}$	.13
5	29.60	30.33	28.97	1.36	.416	$\frac{29.60 \times .416}{100}$	.12
6	44.80	30.33	29.29	1.04	.318	$\frac{44.80 \times .318}{100}$	.14
7	50.78	30.42	29.02	1.40	.418	$\frac{50.78 \times .418}{100}$	.21
8	40.25	30.42	28.80	1.62	.495	$\frac{40.25 \times .495}{100}$	.20
9	33.77	30.42	29.02	1.40	.428	$\frac{33.77 \times .428}{100}$	.14
10	23.01	30.42	29.63	.79	.242	$\frac{23.01 \times .242}{100}$	.06
11	40.00	31.82	29.00	2.82	.862	$\frac{40.00 \times .862}{100}$	.34
Average					.432		.17

The data above tabulated represent the results of cream tests which were made under as near normal conditions as possible. They show very considerable variations in the per cent. of volatile fatty acids lost. These variations ranged from .141 to .862 per cent., averaging .432 per cent. The calculated errors of reading, due to the loss of volatile fatty acids, also varied considerably. These variations are due to the fluctuations in the per cent. of volatile fatty acids lost, as well as to the variations in the richness of the cream used. The minimum error was .05 per cent., the maximum error

was .34 per cent. and the average was .17 per cent. These results suggested that, since the sulphuric acid used and the heat evolved are largely responsible for the loss of volatile fatty acids in the Babcock test of cream, a difference in the amount of acid and degree of temperatures used may influence the per cent. of volatile fatty acids lost.

EFFECT OF AMOUNT OF ACID ON LOSS OF VOLATILE FATTY ACIDS IN BABCOCK TEST

A sample of cream was weighed into eighteen 9 gram 50 per cent. cream test bottles. To six each of these bottles 5, 7 and 14 c.c. of acid were added and the test made in the usual way. The results are shown in Table XVI.

TABLE XVI.—Showing Effect of Amount of Acid Used in Babcock Test on Loss of Volatile Fatty Acids and on the Resulting Error of Reading

Amount of acid used	Reichert-Meissl Number			Loss of volatile fatty acids per cent.	Error of reading Babcock test per cent.
	In pure fat of cream	In fat column of test	Difference		
7	31.39	30.71	.68	.208	.07
14	31.39	20.27	11.12	3.400	1.10
5	31.39	30.99	.40	.122	.04

The figures of Table XVI suggest very forcefully that the amount of acid used in the Babcock test has a marked influence on the per cent. of volatile fatty acids lost. Where 14 c.c. of acid were used, the fat column was very dark. The loss of volatile fatty acids was 3.4 per cent., causing an error in reading the test of 1.10 per cent. In this experiment, cream testing 32.33 per cent. fat was used. With cream richer in fat the error of reading would have been augmented.

EFFECT OF TEMPERATURE IN TESTER ON LOSS OF VOLATILE FATTY ACIDS IN BABCOCK TEST

Two lots of cream were used in this experiment. Lot 1 tested 53.46 per cent. fat, and lot 2 tested 53.21 per cent. fat. Sixteen tests were made of each lot. One-half of the bottles was placed in a steam turbine tester charged with live steam, and the other half was placed in a hand tester, no heat being applied during the test. The results appear in Table XVII.

TABLE XVII.—Showing Effect of Temperature in Tester on Loss of Volatile Fatty Acids and Resulting Error of Reading

Temperature in tester	Reichert-Meissl Number			Loss of volatile fatty acids per cent.	Error of reading Babcock test per cent.
	In pure fat of cream	In fat column of test	Difference		
1 hot	31.09	30.12	.97	.297	.16
2 hot	31.09	30.76	.33	.101	.05
Average				.199	.105
1 cool	31.09	30.22	.87	.266	.14
2 cool	31.09	30.19	.90	.275	.15
Average				.271	.145

The differences between the per cent. of volatile acids of tests made in a cool and those made in a hot tester are no greater than the variations of tests made in the same tester. The temperature to which the test bottles are exposed in the tester does not seem to have any serious effect on the per cent. of volatile fatty acids lost.

LOSS OF GLYCERYL IN THE BABCOCK TEST

When the volatile fatty acids escape, due to their separation from the glyceryl radical, the glyceryl that is left is also lost, because it forms glycerin which remains in the liquid below the fat column. The glyceryl of the volatile acids, however, is so small in amount that it alone would not affect the test. It must be remembered, though, that the chemical composition of the butter fats is

a complex one. The fatty acids of the glycerides of both volatile and non-volatile fats are combined with the glyceryl radical. This has been demonstrated by Richmond who found that, though butyrin is soluble in alcohol, it cannot be separated from the mixed butter fats by means of alcohol. So it is reasonable that, if a part of the volatile fatty acids is volatilized, a proportionate part of the non-volatile fatty acids also separates from the glyceryl.

Butter fat contains about 12.5 per cent. glycerin. The molecular weight of glycerin ($C_3H_8(OH)_3$) is 92. The molecular weight of glyceryl ($C_3H_5(--)_3$) is 41. Therefore, the per cent. of glyceryl in butter fat is $\left(\frac{41 \times 12.5}{92}\right)$ or 5.57 per cent. The per cent. of mixed fatty acids then is as follows:

100.00 per cent. total fats

5.57 per cent. glyceryl

94.43 per cent. mixed fatty acids approximately.

(The 94.43 per cent. represents the per cent. of fatty acids in butter minus the basic hydrogen which is derived from exterior sources.)

To find the per cent. of glyceryl lost in the fat, the following proportion is used: % total acids: % volatile acids = % total glyceryl: X, or $94.4 : .86 = 5.57 : X$; $X = .051$ per cent.

The loss of fat in per cent. of test, due to glycerin then would be: $\frac{\text{test} \times \% \text{ glyceryl lost}}{100} = \% \text{ shortage in reading test}$. In a 40

per cent. test the error due to loss of glyceryl then is: $\left(\frac{40 \times .051}{100}\right) = .02$ per cent. fat lost.

RELATION OF THESE FACTORS TO EACH OTHER AND THEIR EFFECT ON THE ACCURACY OF THE TEST

The data and discussions in the previous chapters bring to light two significant facts, namely, that all of the fat contained in the cream does not appear in the fat column of the test bottle, and that the fat column does not consist of pure fat, but is mixed with considerable and varying quantities of water and acid. In the one case there is a tendency to make the test read too low; in the other case there is a disposition to cause the reading to be too high. The effect of these disturbing elements on the accuracy of the test must of necessity depend on the degree to which they may offset each other. For convenience, these opposing factors are tabulated on the following page.

TABLE XVIII.—Showing Effect of Losses and Gains on Accuracy of the Test

Sample number	Decrease of test due to:			Total losses of test per cent.	Total gains of test by impurities in fat column per cent.	Difference
	Loss of residual fat per cent.	Loss of volatile acids per cent.	Loss of glyceryl per cent.			
1	.28	.21	.025	.015	.55	+ .035
2	.34	.20	.020	.560	.45	— .110
3	.30	.14	.017	.457	.46	+ .003
4	.38	.06	.010	.450	.28	— .170
5	.26	.20	.020	.480	.82	+ .340
6	.28	.24	.020	.540	.70	+ .160
7	.34	.04	.017	.397	.40	+ .003
8	.33	.13	.016	.476	.33	— .146
9	.26	.12	.015	.395	.39	— .005
10	.29	.15	.022	.462	.81	+ .348
Average	.306	.149	.018	.473	.52	+ .047

The summary in Table XVIII represents the results of tests made under normal conditions. In it an attempt has been made to balance the losses with the gains. The + sign indicates that the gains are greater than the losses; the — sign indicates that the losses are greater than the gains. The difference between the two in any individual case may be a gain or a loss in the test. The differences are comparatively slight, averaging only + .047. For all practical purposes, therefore, the gains offset the losses, which means that, when the test is made in the normal way and as it should be made, the losses and gains do not interfere with its accuracy.

It must be remembered, however, that under certain abnormal conditions, the accuracy of the test may be seriously influenced. The most striking example of this fact is shown in Tables IX and XVI and on page 572, dealing with the effect of the amount of acid used on the losses and gains of the test. The impurities increased the test 6.68 per cent., while there were losses in the form

of residual fat of 1.14 per cent. and of volatile fatty acids of 1.1 per cent. Although both the losses and the gains were intensified when an excess of acid was used, the impurities were so much more affected that the use of too much acid may, under certain conditions, greatly interfere with the accuracy of the test, causing too high reading. Insufficient speed of the tester is another factor which increased the impurities and the residual fat, and which may lead to very misleading results.

All of these facts emphasize the great need of operating the test according to directions and of paying careful attention to every detail. Carelessness and neglect render the test unreliable.

THE MENISCUS

It has been shown in the previous chapters that the gains in the test, due to impurities of the fat on the one hand, and the losses in the test, due to residual fat and escape of volatile fatty acids on the other hand, practically balance each other, provided that the test is made under normal conditions. With the interference of these disturbing factors eliminated, our attention was concentrated on the reading of the test proper. The difficulty of correctly reading the cream test lies largely in the uncertain and often indistinct character of the meniscus.

By the term meniscus is meant the concave curve on the surface of the fat column. It is caused by capillary attraction. Since capillary attraction varies with the diameter of the tube or neck, the meniscus varies in depth according to the diameter of the neck of the bottle used. It is generally assumed that the meniscus increases as the diameter of the neck increases. This is erroneous. Capillary attraction is greatest in very narrow tubes. As the diameter of the neck increases, the capillary attraction decreases and may cease entirely in very wide tubes. The meniscus, therefore, also is deepest in a narrow neck bottle; it decreases or becomes shallower as the neck becomes wider. This decrease of the meniscus in wide neck bottles is more than offset, however, by the shortening of the graduation in such necks. For this reason there is not much difference between the per cent. meniscus found in the different styles of 6 inch cream test bottles. The greater length of the scale in the 30 per cent. 18 gram and in the 50 per cent. 9 gram bottles compensates approximately for the increase in depth of the meniscus due to the narrow neck, as compared with the shorter length of graduation in the wider necks of the 40 and 50 per cent. 18 gram test bottles. The meniscus in most of these bottles is about 1 per cent. when read under similar conditions, allowing, however, for many exceptions in which it may

fall slightly below or rise considerably above that figure. This rule does not hold true with the 10 per cent. milk test bottles and the 9 inch cream test bottles where the increase in the length of the graduation is much greater than the increase in the depth of the meniscus. In the case of the 10 per cent. milk test bottles the meniscus amounts to about .2 to .3 per cent., in the 9 inch bottles it varies between wider limits, averaging about .4 per cent.

**SHOULD THE MENISCUS OR ANY PART THEREOF BE INCLUDED
IN THE READING OF THE CREAM TEST**

Experimental results have shown that in the case of the Babcock test with milk, the entire meniscus must be included in the reading in order to secure accurate results. This was found to be due to the fact that the residual fat in the test of most milk products is constant, amounting to about .2 to .3 per cent. In the milk test the per cent. of fat is so small that there are practically no gains in the fat column due to impurities. Since the meniscus in the milk test bottle amounts to about .2 to .3 per cent., it will, when included in the reading, offset the loss due to residual fat.

In the cream test the loss due to residual fat is fully neutralized by the gain due to impurities in the fat column. There should, therefore, be no need of including the meniscus or any part thereof in the reading to offset those losses. Notwithstanding this fact, there has been much and continuous dispute concerning the consideration of the meniscus in the cream test. The importance of a correct understanding of this factor is emphasized by the fact that the meniscus in the cream test is large enough, 1 per cent. or more, to materially affect the accuracy of the test.

The results of a series of experiments in which readings with and without the meniscus are compared with the gravimetric fat estimation are summarized in Tables XIX and XX. The tests shown in Table XIX were read at 120 degrees F., the tests shown in Table XX were read at 135 degrees F.

TABLE XIX.—Showing Reading to the Bottom and to the Top of the Meniscus, Per Cent. Meniscus and Gravimetric Fat Estimation. These Tests were Read at 120 Degrees F.

Sample number	Number of tests	Reading of fat column		Meniscus per cent.	Gravimetric fat estimation per cent.
		To top of the meniscus per cent.	To bottom of the meniscus per cent.		
1	16	16.60	15.55	1.05	15.90
2	36	26.43	25.41	1.02	26.37
3	40	21.41	20.51	.90	20.95
4	39	13.38	12.38	1.00	12.86
5	40	18.41	17.58	.83	17.65
6	18	20.58	20.08	.50	20.10
7	40	13.08	12.10	.98	12.41
8	24	21.90	20.89	1.01	21.14
9	11	25.93	24.90	1.03	26.18
10	11	25.09	24.09	1.00	24.52
11	35	30.28	29.28	1.00	29.85
12	21	29.96	28.96	1.00	29.40
13	24	39.31	37.75	1.56	38.40
Average		23.25	22.26	.99	22.75
Total number of tests	355				

TABLE XX.—Showing Reading to Bottom and to Top of the Meniscus, Per Cent. Meniscus and Gravimetric Fat Estimation. These Tests were Read at 135 Degrees F.

Sample number	Number of tests	Reading of fat column		Meniscus per cent.	Gravimetric fat estimation per cent.
		To top of the meniscus per cent.	To bottom of the meniscus per cent.		
1	16	16.62	15.62	1.00	15.90
2	36	26.61	25.58	1.03	26.37
3	40	21.42	20.42	1.00	20.95
4	39	13.38	12.38	1.00	12.86
5	40	18.43	17.59	.84	17.65
6	18	21.00	20.50	.50	20.10
7	40	13.29	12.29	1.00	12.41
8	24	21.96	20.96	1.00	21.14
9	11	25.93	24.90	1.03	26.18
10	11	25.29	24.29	1.00	24.52
11	35	30.50	29.50	1.00	29.85
12	21	29.96	28.96	1.00	29.40
13	24	39.65	38.23	1.42	38.40
Average		23.38	22.40	.99	22.75
Total number of tests	356				

The results shown in the two tables represent tests of 13 different samples and readings from 355 tests. The same tests were read at 120 degrees F. and 135 degrees F. At 120 degrees F. (Table XIX) the maximum difference between readings to the bottom of the meniscus and the gravimetric fat estimation was 1.28 per cent., the minimum difference was .02 per cent. and the average difference was .49 per cent. At 135 degrees F. (Table XX) the maximum difference between readings to the bottom of the meniscus and the gravimetric fat estimation was 1.28 per cent., the minimum difference was .06 per cent. and the average difference was .35 per cent. At either temperature the readings to the bottom of the meniscus averaged lower than the results of the gravimetric fat estimation. The error was greater at 120 degrees F. than at 135 degrees F. The meniscus at either temperature averaged .99 per cent. In order to read correctly at either temperature, a part of the meniscus would have to be included in the reading. At 120 degrees F. one-half of the meniscus would have to be included; at 135 degrees F. the addition of one-third of the meniscus would yield correct results. The one-third meniscus reading was, therefore, temporarily adopted as the correct reading. Since it is easier to read to the top of the meniscus than to the bottom, two-thirds of the average meniscus may be deducted. The average meniscus was .99 per cent.; two-thirds of this is .66 per cent. Read to the top of the meniscus and deduct .66 per cent. These corrections by the addition of a definite portion of the meniscus as calculated from the averages, when applied in individual cases, may fall short of yielding correct results. As shown in the above figures, the results of the individual samples are far from being uniform and the per cent. meniscus varies very considerably in different tests.

OTHER CONDITIONS AFFECTING THE APPARENT DEPTH OF THE MENISCUS

The difficulty in correctly reading the meniscus is intensified by various and ever changing conditions incident to the reading of the test, such as color and clearness of fat, amount and direction of light, kind of background of the test bottle, angle from which the test is read, etc.

A dark colored fat makes the meniscus appear larger; reflected light gives different apparent results than transmitted light; a dark background shows a different meniscus than a light background; (this is readily demonstrated by passing a card, half white and half

black, up and down behind the fat column when the test is read) if the test is not read on the level with the eye, almost any kind of a meniscus reading may be obtained.

These disturbing conditions are naturally conducive of considerable variations in the reading. While they are largely optical illusions only, they are, nevertheless, present and are continuously interfering with the accuracy of the results. The presence of these conditions further explains why different persons, all endeavoring to read correctly, often vary considerably in their results when reading the same tests. The unreasonable deviations from the gravimetric fat estimation of the individual tests, summarized in Tables XIX and XX are very probably also largely due to these disturbing elements.

USE OF THE MIRROR IN READING CREAM TESTS

In order to arrive at more satisfactory and consistent conclusions concerning the proper reading of the cream test, an attempt was made to eliminate as many as possible of these interfering factors; 185 tests were made of 15 different samples of cream and the results were compared with the gravimetric fat estimation. In order to insure most accurate reading, a mirror was used. The mirror was suspended in a vertical position and hung level with the eye of the operator. The reading was accomplished by holding the test bottle between the eye of the operator and the mirror. The top of the fat column was read as soon as the point of the dividers, the surface of the fat column and the eye of the operator were on the level with the image of the eye in the mirror. The bottom of the fat column was read with the same precaution. The results are shown in Table XXI.

TABLE XXI.—Showing Results of Tests Read with the Mirror
(9 Gram 50 Per Cent. Bottles Were Used).
These Tests were Read at 135 Degrees F.

Sample number	Number of tests	Reading of fat column		Gravimetric fat estimation per cent.	Error per cent.
		To top of the meniscus per cent.	To bottom of the meniscus per cent.		
1	12	37.04	36.04	35.96	+.08
2	11	18.50	17.50	17.61	— .11
3	23	44.88	43.88	43.77	+.11
4	12	40.79	39.79	39.62	+.17
5	12	22.50	21.50	21.72	— .22
6	12	35.35	34.35	34.06	+.29
7	12	32.70	31.70	31.71	— .01
8	11	21.83	20.83	20.83	.00
9	12	19.92	18.92	18.88	+.04
10	12	28.66	27.66	27.48	+.18
11	12	29.65	28.65	29.04	— .59
12	12	20.25	19.25	19.47	— .22
13	12	20.97	19.97	20.00	— .03
14	12	30.14	29.14	29.61	— .47
15	8	41.86	40.86	40.31	+.55
Average		29.66	28.66	28.66	.00
Total number of tests		185			

By reading to the bottom of the meniscus the maximum error was .59 per cent., the minimum error was .00 per cent., and the average of the 185 tests corresponded exactly with the average of the gravimetric fat estimation.

Table XXI shows that, when the test is really read correctly and at a temperature of 135 degrees F., the one-third meniscus reading would be too high. They further show that reading to the

bottom of the meniscus only, yields results which compare most closely with those of the gravimetric fat estimations. It is evident from these comparisons that many of the previous readings without the use of the mirror have been too low. This accounts for the necessity of including one-third of the meniscus in the reading in order to make the results check with the gravimetric fat estimation. Further investigation demonstrated that, when the test is made in the usual way, the eye is on the level with the center of the fat column. When the dividers are thus placed in position there is a considerable chance for error and the tendency is to read the test too low. This fact was brought out very conclusively when an experienced tester was called on to read the same tests without any knowledge of the experiment. His readings without the mirror were all from .25 to .50 per cent. too low.

REMOVING THE MENISCUS

The results discussed in previous chapters can leave no doubt that the meniscus seriously interferes with the accuracy of the reading. It is seldom sharply defined; the changes of conditions under which it is seen deceive the eye, and the operator, in trying to read it, labors under optical illusions over which he has little or no control. Moreover, when the test is read properly, as shown by the use of the mirror, the meniscus should not be included in the reading. For these reasons it is obvious that any method doing away with the meniscus, without otherwise interfering with the test, necessarily simplifies the work and increases the accuracy and reliability of the reading.

ADDITION OF ALCOHOL

Eckles recommends the addition to the test of a small amount of amyl alcohol, colored red with fuchsin. Farrington recommends the addition to the test of a small amount of fat-saturated alcohol. These liquids are lighter than the fat. When dropped on top of the fat column in the test bottle, they float. They remove the meniscus from the surface of the fat column to the top of the alcohol and, theoretically, leave a straight line across the top of the fat column. These methods remove the objections of the meniscus. Comparisons with the gravimetric fat estimation showed that, with the addition of alcohol, the readings were more uniform and more accurate.

While these methods are a distinct improvement over the reading without the addition of alcohol, they, too, have their disadvantages.

Amyl alcohol dissolves fat in all proportions. Its fat-solving

properties emphasize the need of reading the test at once after the addition of the alcohol. The use of amyl alcohol is unsatisfactory for practical work, owing to the harmful and probably poisonous effect of the vapors of amyl alcohol on the operator. Experience has shown that men who test cream all day with the amyl alcohol method become ill.

Ordinary fat-saturated alcohol theoretically eliminates the danger of dissolving a portion of the fat in the test. Unless it is kept warm, however, it can hold but very minute amounts of fat in solution. When the cold alcohol is added to the warm test, that portion of the alcohol which comes in contact with the fat column ceases to be fat-saturated and acts on the fat similarly as ordinary non-saturated alcohol. Experience has shown that, when it is poured upon the fat column, the line of demarkation is not always distinct and often is slanting and ragged, the fat clinging to the glass on one side and not on the other. Again, the fat tends to rise into the alcohol; the alcohol becomes milky and the distinctness of the surface line of the fat is disturbed. The milkiess of the alcohol may also be due to the fact that the alcohol weakens by taking up moisture from the fat, causing the precipitation of a portion of the fat with which the alcohol is saturated. That there is considerable fusion between the alcohol and the fat column is readily shown, when the alcohol is colored with some stain such as fuchsin, before use. When poured on the surface of the fat column, there appear streaks of coloration throughout the fat column. Furthermore, if the temperature of the fat changes, after the alcohol is added, a concave or convex curve forms at the bottom and top of the fat column. The correct reading of this curve presents similar difficulties as that of the original meniscus.

THE ADDITION OF GLYMOL

In view of the facts brought out in the previous chapter, it is clear that, while the use of alcohol removes the chief objectionable feature of the reading, the meniscus, it introduces new difficulties which partly offset its virtues. An attempt was made, therefore, to find a liquid which, lighter than fat like alcohol, would eliminate the meniscus without adding the objectionable features of the latter.

The first substance experimented with was paraffine of a low melting point. While the results of the reading with the help of the melted paraffine were satisfactory, this method was undesirable because the paraffine solidified rapidly. It was, also, objectionable because it rendered the rapid and thorough cleansing of the test bottles difficult.

The use of paraffine lead to experiments with glymol. Glymol (petrolatum liquidum U. S. P.) is a petroleum distillate. It is known commercially by the name of white mineral oil. It is a high quality of machine oil and is used for typewriter oil, sewing machine oil, etc. Glymol is a clear, colorless oil. It, therefore, can be used with good results without the addition of coloring matter. It is odorless and does not volatilize upon exposure to the air. It, therefore, has no harmful effect on the operator and does not weaken in the open. Glymol being an oil, the butter fat in the neck of the test bottle can follow it up and down the side of the neck more readily than it follows the alcohol. In the case of changes of temperature of the fat column, after the glymol is added, no curve forms at the top and bottom of the fat column, the surface line of the fat remains straight

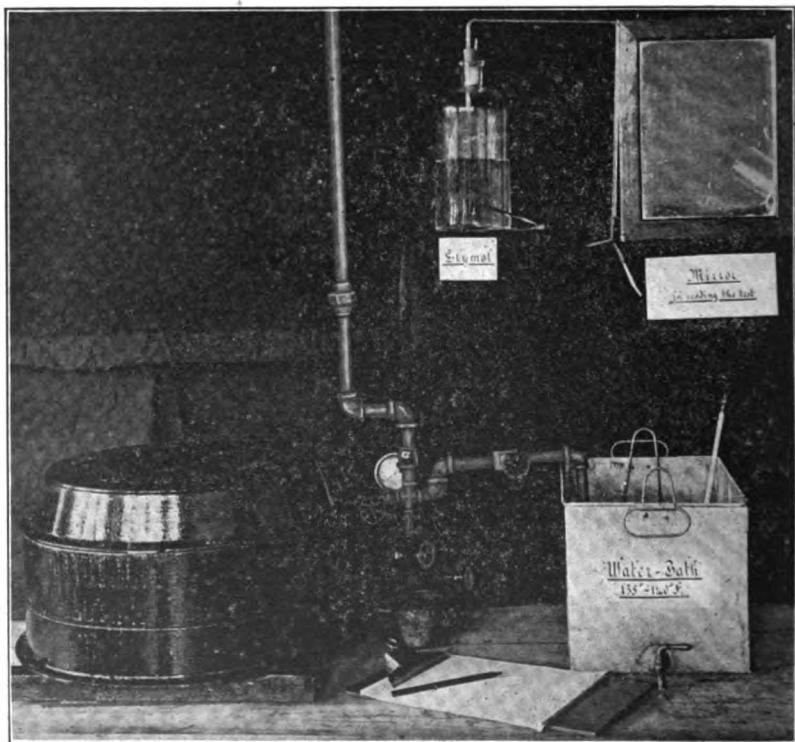


Fig. 16. Showing equipment for testing cream with glymol and the mirror

and level and the line of demarkation is entirely distinct, affording easy and accurate reading. Glymol does not mix with the moisture of the fat column. Glymol can be purchased from any wholesale or retail drug establishment, under the name of white mineral oil for about 75 cents per gallon. The results of 248 tests with glymol are shown in Table XXII.



FIG. 17. Showing another simple method of adding glymol. By placing the finger over the top of the glass tube, the glymol can be transferred to the test bottles

TABLE XXII.—Showing a Comparison of Glymol Readings with the Results of the Gravimetric Fat Estimations

Sample number	Number of tests	Glymol reading at a temperature of 185° F.	Gravimetric fat estimation	Difference
1	11	40.62	40.31	+.31
2	12	34.30	34.06	+.24
3	12	31.65	31.71	— .06
4	12	29.87	29.61	+.26
5	11	45.02	44.80	+.22
6	12	28.83	29.04	— .21
7	12	27.65	27.48	+.17
8	12	19.24	19.47	— .23
9	12	20.04	20.00	+.04
10	12	19.00	18.88	+.12
11	6	32.62	32.29	+.33
12	12	35.78	35.96	— .18
13	12	17.46	17.61	— .15
14	12	43.83	43.77	+.06
15	12	39.76	39.62	+.14
16	12	40.73	40.73	.00
17	12	27.76	27.89	— .13
18	12	21.56	21.72	— .16
19	11	38.37	38.22	+.15
20	9	19.87	20.06	— .19
21	10	16.53	16.80	— .27
22	12	20.85	20.83	+.02
Average		29.66	29.584	.02
Total number of tests	248			

The results in Table XXII speak for themselves. Twenty-two samples of cream were used in this experiment and 248 tests were made. The maximum difference between the readings of any one sample and the results of the gravimetric fat estimations was .33 per cent. In the case of one sample the results checked exactly; in five other samples the difference was less than .1 per cent. The average difference was only .02 per cent.

Taking into consideration the fact that the cream for these tests was not weighed on analytical balances, that the graduation marks on the bottles do not permit of reading closer than .25 per cent. and that the gravimetric fat estimation is also subject to yielding slight errors, it is reasonable to conclude that the results of the glymol method represent the maximum degree of accuracy that may be expected of cream tests for factory use. In addition to its great efficiency, the test can be performed with the least possible amount of extra work. The glymol can be added to the test bottle while the tests are being read. The glymol test combines the virtues of the alcohol tests and it is practically free from their objectionable features.

TEMPERATURE OF READING AND THE USE OF THE WATER BATH

These tests were read at a temperature of 135 degrees F. This is the temperature at which the specific gravity of pure butter fat is .9. The graduation of the Babcock test bottles is based on butter fat with this specific gravity. Experimental readings were also made at 120 and 110 degrees F. respectively. The results of readings at these lower temperatures averaged between .1 and .2 per cent. too low. The tests should, therefore, be read at 135 degrees F.

In order to insure control of the temperature, all bottles were set in a water bath at 135 to 140 degrees F. 15 minutes before reading. The desirability of the use of a water bath cannot be emphasized too strongly; the temperature in the tester is difficult to regulate and, when the bottles are taken from the tester, nothing definite is known concerning the temperature of their contents.

The glymol was added to the tests as the bottles were taken from the water bath and just before reading. Experience has shown that the addition of glymol is most readily and rapidly made at this stage of the work. There is no particular objection to adding the glymol earlier, but it is believed that the line of demarkation is sharpest and the reading easiest immediately after the glymol has been added.

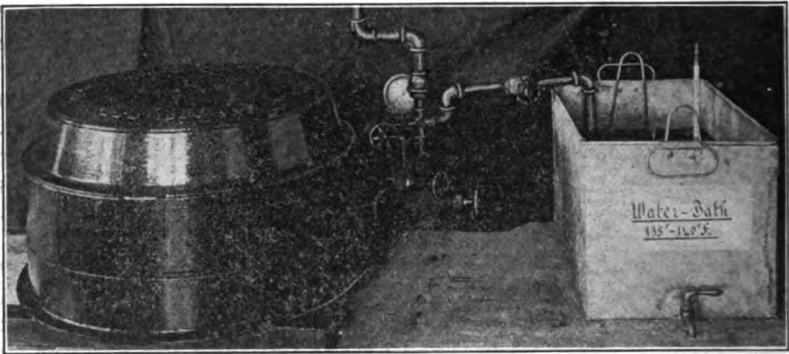


Fig. 18. Showing the water bath connected with the Babcock tester. The use of the water bath is indispensable for accurate results. The test bottles should remain in the water bath for 15 minutes before reading

THE PRACTICABILITY OF THE MIRROR

All of the tests tabulated in Table XXII were read with the aid of the mirror. It is very desirable that the mirror be used in the reading of all cream tests. The cost of the mirror is small and a suitable place to permanently suspend a mirror can readily be found over the testing bench in every creamery. Its use is a great help for rapid and accurate reading. The operator becomes quickly accustomed to it. The use of the mirror is especially advisable for beginners who generally do not realize the great importance of reading the test on the level with the eye, and who do not know when their test bottles are entirely out of position for correct reading. When they have once become accustomed to read with the help of the mirror, they usually have learned to read correctly also without the mirror.

DIRECTIONS FOR THE OPERATION OF THE GLYMOL METHOD

ADDITIONAL APPARATUS

- One water bath
- One bottle containing glymol
- One mirror suspended vertically
- One pair dividers

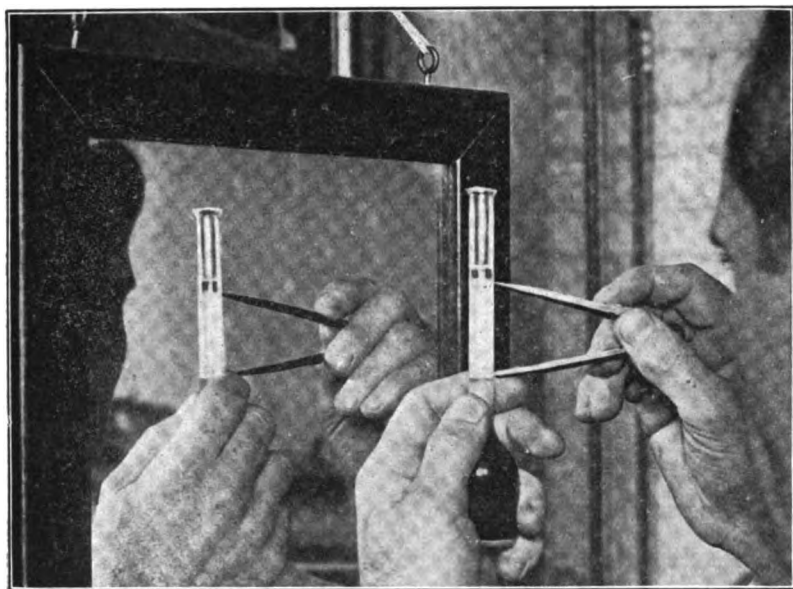


Fig. 19. Showing the glymol method of reading with the aid of the mirror

Operation: Remove the test bottles from the tester and place them in a water bath at a temperature of 135 to 140 degrees F. for 15 minutes. As the bottles are taken from the water bath for reading, draw about one-fourth of an inch of glymol into them. Read at once. If a mirror is used, see that the image of the eye of the operator in the mirror is in a straight line with the point of the dividers and the eye of the operator. *The mirror must be suspended vertically.*

DIRECTIONS FOR COLORING GLYMOL

Glymol is best colored with alkanet root. The glymol or white mineral oil extracts the coloring principle from the alkanet root and assumes a bright cherry color. Alkanet root is sold by druggists at about 25 cents per pound.

Use one ounce of crushed alkanet root to one quart of glymol. A simple and convenient way of dissolving the alkanet root in the glymol is the following: wrap the alkanet root in a small piece of cheese-cloth and place it in the vessel containing the glymol. Leave the alkanet root in the glymol for one to two days. Glymol may be used with or without the addition of coloring matter.

**LIST OF INDIANA CREAMERIES WHICH ARE USING TESTED
GLASSWARE AND NUMBER OF SHIPMENTS CALIBRATED
BY THE EXPERIMENT STATION**

Number of shipments	Name	Address
1	Albion Creamery Company.....	Albion
1	Alexandria Creamery Company.....	Alexandria
1	Amboy Creamery Company.....	Amboy
2	Ashland Creamery Company.....	Paragon
1	Atkinson & Company.....	Oakland City
1	Bargersville Creamery Association.....	Bargersville
1	Barker, Perry.....	Thorntown
1	Beyer Bros. Company.....	Rochester
1	Bloomington Coop. Creamery Association.....	Bloomington
1	Brown County Creamery Association.....	Nashville
2	Butler Ice Cream Company.....	Butler
1	Campbell's Ice Cream & Milk Company.....	Muncie
1	Canaan Creamery Company.....	Canaan
2	Chrisney Creamery Company.....	Chrisney
1	Clover Leaf Creamery Company.....	Marion
2	Columbus Coop. Creamery Company.....	Columbus
1	Commons Dairy Company.....	Richmond
1	Crystal Springs Creamery Company.....	Osceola
1	DeMotte Creamery Company.....	DeMotte
1	Dussel, C. A.....	Bristol
1	Dyer Creamery Company.....	Dyer
2	Eel River Valley Creamery Company.....	North Manchester
1	Eel River Valley Creamery Company.....	South Whitley
1	Eel River Valley Creamery Company.....	Wabash
1	Ellerbrook Bros.	Dillsboro
1	Evansville Pure Milk Company.....	Evansville
1	Ewing's Sons, D. H.....	Louisville, Ky.
1	Fortville Creamery, The.....	Fortville
2	Furnas Ice Cream Company, R. W.....	Indianapolis
1	Hauptert, E. W.....	Urbana
1	Hebron Butter & Cheese Company.....	Hebron
2	Holland Creamery Company.....	Holland
1	Hope Creamery Company.....	Hope
1	Huntingburg Creamery Company.....	Huntingburg
1	Ireland Creamery Company.....	Ireland
3	Jasper Creamery Company.....	Jasper
1	Jersey Elgin Butter Company.....	Greenwood
1	Kewanna Golden Chain Creamery.....	Kewanna

1	Lebanon Creamery Company.....	Lebanon
1	Lewisville Butter & Cheese Company.....	Lewisville
1	Liberty Creamery Company.....	Liberty
2	Lima Creamery Company	Howe
2	Lutterback, Wm.	Armstrong
2	Memphis Creamery Association.....	Memphis
1	Middlebury Creamery	Middlebury
5	Miller, R. F.....	Topeka
1	Monroe Creamery Association.....	Monroe
1	Monrovia Creamery Company.....	Monrovia
1	McPherson, W. A.....	Monon
2	New Harmony Creamery Company.....	New Harmony
1	North Madison Creamery Company.....	North Madison
1	Osgood Creamery Company.....	Pierceville
1	Palmyra Creamery Company	Palmyra
2	Polk Sanitary Milk Company.....	Indianapolis
2	Purdue Creamery	LaFayette
1	Ray & Arnold Creamery.....	Logansport
1	Ripley Valley Creamery Association	Delaware
1	Roann Creamery Company.....	Roann
1	Rockport Creamery Company.....	Rockport
2	Sanitary Creamery Company	Brazil
1	Santa Claus Creamery Company.....	Santa Claus
1	Schlosser Bros.	Bremen
2	Schlosser Bros.	Indianapolis
3	Schlosser Bros.	Plymouth
1	Stephens & Sons	New Harmony
1	Swiss Milk Company	Berne
1	Uniontown Creamery Company	Uniontown
1	White River Creamery Company	Muncie
1	White Water Creamery Company.....	Connersville
1	Winamac Skimming Station.....	Winamac
1	Zirkle, J. Luther.....	Roanoke

